GLOBAL ARMS TRADE

S U M M A R Y

CONGRESS OF THE UNITED STATES
OFFICE OF TECHNOLOGY ASSESSMENT

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Foreword

The recent war in the Persian Gulf has once again focused attention on the proliferation of advanced weapons and the international arms industry. Although Iraq had little or no defense industrial capability, it was able to obtain a vast arsenal of modern weapons from the Soviet Union, Western Europe, China, Eastern Europe, and a variety of arms producers in the developing world.

Today, the international arms market is a buyers' market in which modern tanks, fighter aircraft, submarines, missiles, and other weapons are available to any nation that can afford them. Increasingly, sales of major weapons also include the transfer of the underlying technologies necessary for local production, resulting in widespread proliferation of modern weapons and the means to produce—and even develop—them.

The end of the Cold War has brought profoundly decreased demand for weapons by the United States, the Soviet Union, and most European governments. In the United States, and elsewhere, some defense companies are seeking to increase their international sales as part of a strategy to adjust to the new realities of lower procurement budgets and less domestic demand for their products. But because of worldwide overcapacity in defense production, competition is fierce and sales arrangements are complex, increasingly bypassing government-to-government agreements.

Congress faces two very important and interconnected issues: 1) controlling the proliferation of modern weapons and defense technology and 2) the health of the U.S. defense industries. This report, the final product of OTA's assessment on international collaboration in defense technology, explores the form and dynamics of the international defense industry, the intricacies of technology transfer and equipment sales, and the implications for U.S. policy. An interim report, *Arming Our Allies: Cooperation and Competition in Defense Technology*, was published in May 1990.

This assessment was requested by the Senate Committee on Armed Services and the House Committee on Government Operations. OTA particularly wishes to acknowledge the assistance of the Foreign Affairs and National Defense division of the Congressional Research Service in preparing part of this report.

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Chapter 1
Global Defense Business and Arms Proliferation

OVERVIEW AND PRINCIPAL FINDINGS

The war in the Persian Gulf graphically demonstrated the consequences of extensive international commerce in powerful advanced conventional weapons. At the same time, the end of the Cold War and the accompanying decline in defense spending have weakened the political foundation for continuing arms transfers and enhanced the economic motivations for international arms sales. Worldwide, the defense industries face deep recession (and probable permanent adjustment to much lower levels of production) brought on by a general erosion of demand and continued strong overcapacity of production.

Governments take widely differing approaches to the arms trade. Some help their defense companies seek export markets to compensate for insufficient domestic procurement budgets. Some nations view arms sales as an important source of export revenue, a way to spread development costs for new weapons, and a source of domestic employment. Others seek to enhance their stature as regional or international powers by building up a capable defense industry. One country, Japan, has prohibited the export of arms as a matter of public policy.

Traditionally, the U.S. Government has viewed arms sales and transfers primarily as instruments of foreign policy—to exert regional influence, to strengthen alliances, and to oppose the expansion of Communist power. In the past 2 years, some government officials have become concerned over the likely loss of important elements of the domestic defense industry as companies adjust to dramatic declines in domestic procurement; they have become more sympathetic to the desire of U.S. defense companies to increase export sales.[1] International sales, however, proliferate advanced weapons and often involve collaborative production arrangements with far-reaching consequences.

This situation poses a major national policy dilemma—how to balance the use of arms exports as instruments of foreign policy, pressure by companies for greater access to foreign markets, the need to stem a dangerous worldwide arms buildup, and the increasing proliferation of both defense equipment and defense industry. This report, the final product of OTA's assessment on international collaboration in defense technology, explores the form and dynamics of the international defense industry, the intricacies of technology transfer and equipment sales, and the implications for U.S. policy.

Several factors suggest a review of U.S. policy on arms exports and collaboration in military technology:[2]

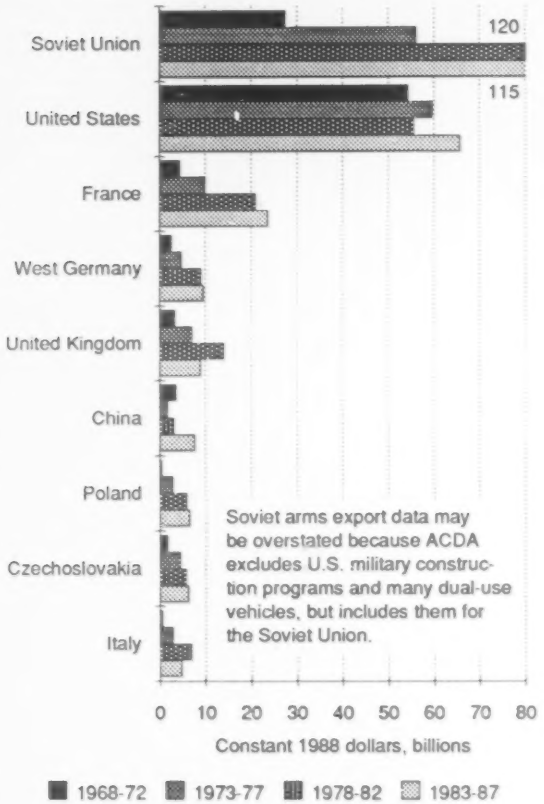
- The winding down of the Cold War is exerting an immediate and powerful downward pressure on defense expenditures in the West as governments implement budget cuts and force reductions associated with decreased East-West tensions;
- The emergence of new centers of advanced defense industry and technology is accelerating the proliferation of modern weapons (and increasing overcapacity in worldwide weapons production); and
- Western nations have helped arm Iraq, the rest of the Middle East, and other regions with little concern or oversight about the near- or far-term consequences.

The end of the Cold War has radically transformed the structure of international relations and the environment for international defense business. As the Persian Gulf War and nationalist struggles

[1]The Department of State and the Defense Security Assistance Agency contend that the United States should use foreign sales to support continued domestic production of U.S. weapons systems: "Unless we adjust to the challenge of an increasingly diverse international defense supply environment, the United States will be unable to address satisfactorily the legitimate defense needs of our friends and allies, and thereby our own, at an acceptable cost in the coming years. Indeed, the long-term survival of a number of important domestic arms programs are tied to foreign sales: M1A1 Abrams battle tank, Blackhawk helicopter, HAWK surface-to-air missile, Boeing 707 aircraft, to name a few." U.S. Department of State and U.S. Defense Security Assistance Agency, *Congressional Presentation for Security Assistance Programs*, fiscal year 1992, p. 6.

[2]International collaboration can take many forms, including but not limited to transfer of technical assistance, codevelopment, co- and licensed production, and licensed assembly. It may also involve a variety of business relationships such as revenue sharing, subcontracting, consortium, joint venture, and corporate alliance, among others.

Figure 1-1—Major Arms Exporters, 1968-87



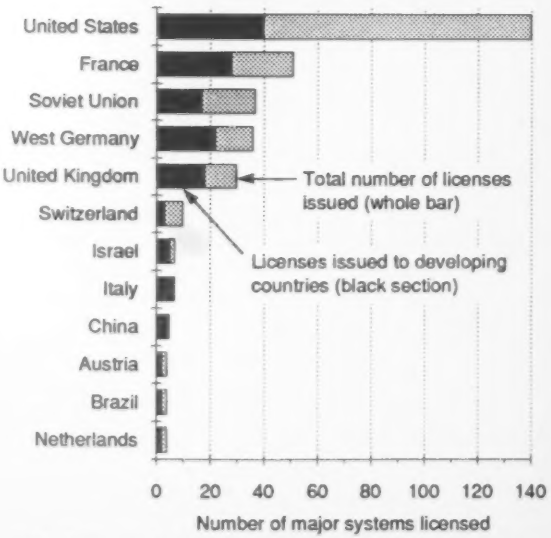
SOURCE: Office of Technology Assessment and David J. Louscher, from data in U. S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers*, various years (Washington, DC: U.S. Government Printing Office).

throughout the former sphere of Soviet influence attest, it is still too early to fill in the outlines of the emerging world order. Nevertheless, the threat of Soviet expansionism is greatly reduced, the possibility of a Warsaw Pact invasion of Western Europe has been eliminated, and the Soviet Union appears to be following a policy of restraint in arms exports. Accordingly, the defense equipment requirements of the United States and its European Allies are diminishing significantly. Moreover, a principal reason why the United States transferred weapons and defense technology to allied and friendly nations—to counter Communist influence—has been reduced.

The winding down of East-West antagonisms, however, has left profound uncertainty as to the nature and extent of future military threats to the United States, its allies, and its foreign political and economic interests. The threat may come from a variety of heavily armed nations that, like Iraq, oppose U.S. interests and forces in places and for reasons that cannot be easily anticipated. It may conceivably come from reconstituted elements of the Soviet empire. In a multi-polar world the threat of *sporadic militarism* will be reinforced and magnified by the availability of potent weapons and the knowledge of how to make and use them.

Another major factor affecting policy is the proliferation of the defense industries.[3] The arms production and export capabilities of a number of countries have expanded—in the United States, Europe, the Middle East, the Indian subcontinent, South America, and the Western Pacific (see figure 1-1). Increasingly, defense trade combines sales of finished defense systems with transfer of the underlying technologies and industrial infrastructure neces-

Figure 1-2—Worldwide Licensed Production of Major Conventional Weapon Systems, by Country Issuing License, 1960-88

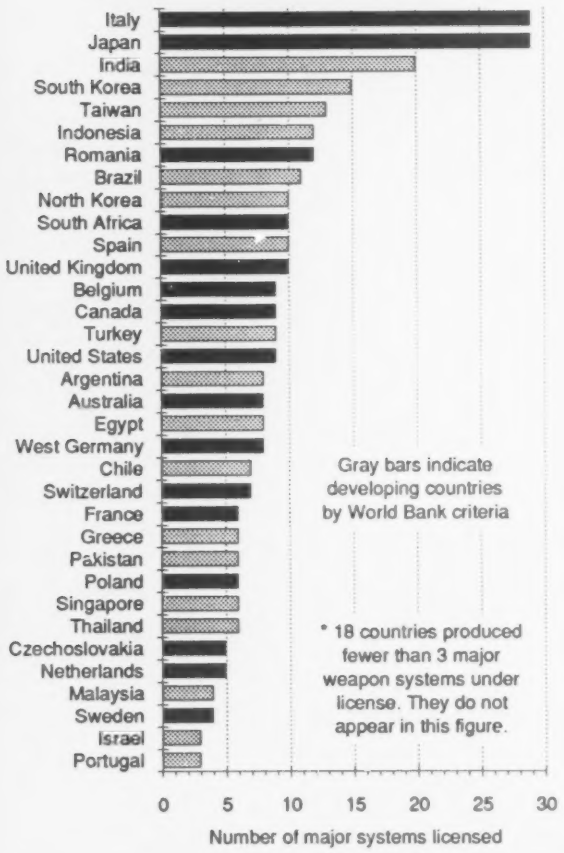


10 other countries issuing fewer than 4 licenses not shown.

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament*.

[3]Chs. 3 through 11 document this process.

Figure 1-3—Worldwide Licensed Production of Major Conventional Weapon Systems, by Country Receiving License, 1960-89

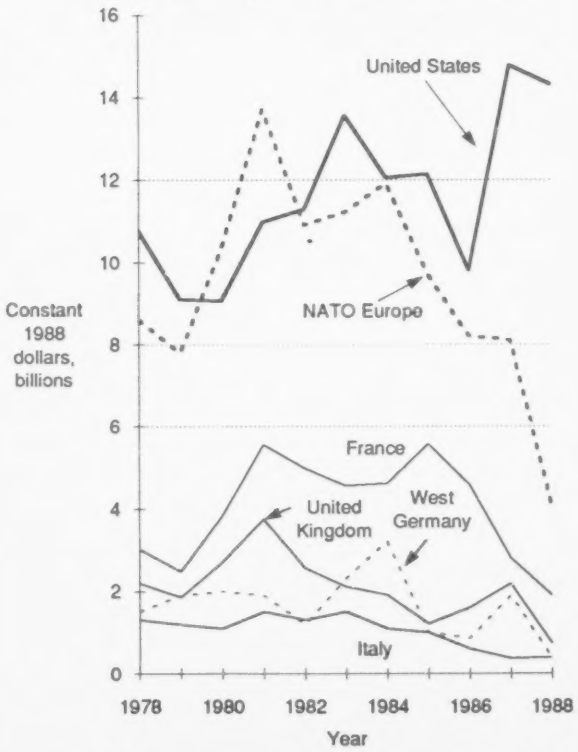


SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

sary for indigenous production (see figures 1-2 and 1-3). (These two subjects—arms sales and technology transfer—are examined in tandem throughout this assessment.) **If Congress intends to exert authority in the arms transfer field, it will have to develop clear policies regarding the transfer of U.S.-origin defense technology to foreign nations.**

Defense companies in Europe produce equipment for export markets that is often as good as and sometimes better than that exported by the United States.[4] European governments often conduct extensive diplomacy in support of arms sales. In the past, this has provided strong competition for U.S. arms exporters, especially in the Middle East, but also in the Western Pacific. Since 1986, however, U.S. arms exports have increased to a 10-year high, while NATO Europe arms exports have fallen (see figure 1-4). In 1988, the last year for which complete data are available, the United States exported $14.3 billion in arms, compared to $4.1 billion for all of NATO Europe. If this trend continues, it may place the United States in a position to exert profound influence on the course of weapons proliferation. On one hand, the United States may choose to press its present advantage, attempting to increase arms exports to the limits of existing markets. On the other hand, as the principal arms exporter in the West, the United States might decide to exercise

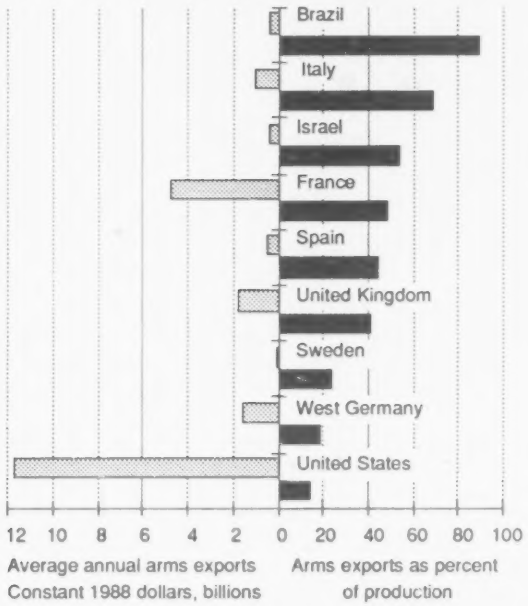
Figure 1-4—Arms Exports by Major NATO Weapons Producers, 1978-88



SOURCE: U. S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990), pp. 88, 111.

[4]The United States still maintains a lead in next-generation defense technology and systems such as the B-2 stealth bomber and the Advanced Tactical Fighter, but it does not export these systems or share the enabling technologies.

Figure 1-5—Average Annual Arms Exports, 1982-86, and Arms Exports as a Percent of Total Arms Production, 1984



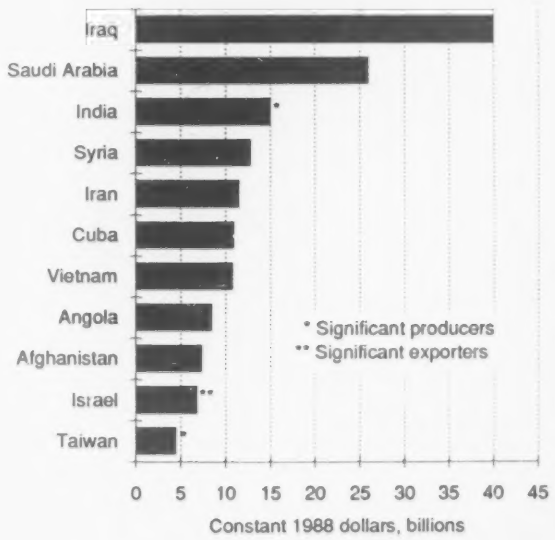
SOURCES: U. S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990), and Stockholm International Peace Research Institute, SIPRI Yearbooks 1986, *World Armaments and Disarmament* (Oxford: Oxford University Press, 1986), p. 336.

its leadership and propose to its Allies ways and means of reducing commerce in modern conventional weapons.

For reasons of national security, nations are willing to underwrite the costs of indigenous development and production of weapons, even in the face of worldwide overcapacity in the defense industries. Many, including the United States, feel much more comfortable if the source is at home. But most nations cannot buy enough domestically produced defense materiel to keep unit costs tolerably low. With the exception of the United States and Japan, procurement officials and company executives believe they must produce weapons for export markets in order to fund the next generation of weapons systems (see figure 1-5). This has created a large flow of advanced weapons to developing[5] countries like Iraq, Saudi Arabia, India, Syria, Iran, and others (see figure 1-6). Only Japan has been willing and able to subsidize enormous costs for limited production runs of sophisticated defense equipment. Operating under a U.S.-imposed constitution and a highly protective U.S. security umbrella, **Japan is the only advanced industrial nation to renounce unilaterally both the export of weapons and the projection of military power in international affairs.**

The proliferation of the ability to produce modern arms (emanating principally from the United States and Europe) has led directly and indirectly to the arming of our adversaries as well as our friends. As OTA previously reported, U.S. companies played a major role in the transfer of sophisticated defense technology to Europe, Japan, and elsewhere.[6] This was accomplished largely through international industrial collaboration, including joint ventures, licensed production, codevelopment, and direct

Figure 1-6—Major Arms Importers, 1983-88

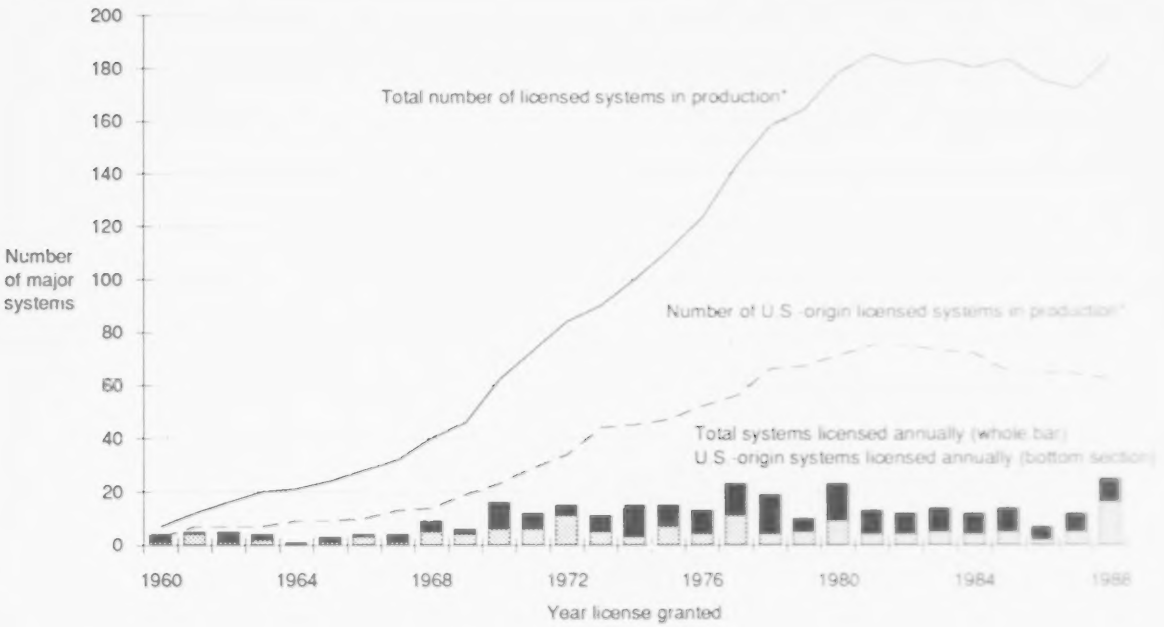


SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990).

[5]In this report, the use of the term "developing" generally follows that of the World Bank—low and middle income countries, including all the nations of Africa, Latin America, and Asia, excluding Japan.

[6]For an analysis of the U.S. contribution to the development of the European and East Asian defense industries, see U.S. Congress, Office of Technology Assessment, *Arming Our Allies: Cooperation and Competition in Defense Technology*, OTA-ISC-449 (Washington, DC: U.S. Government Printing Office, May 1990), passim.

Figure 1-7—Estimated Worldwide Licensed Production of Major Conventional Weapon Systems, 1960-88



*Estimates based on the assumption that an average system is produced under license for 12 years.

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990; *World Armaments and Disarmament*.

offsets (see figures 1-7 and 1-8).[7] Figure 1-7 shows the growth of worldwide licensed production of major weapons systems, including those licensed to other countries by the United States.[8] However, figure 1-7 substantially understates the magnitude of technology transfer because it does not count the codevelopment or licensed production of separate parts or components, which may constitute the majority of all international collaboration. Among many possible examples, the United States has recently transferred highly advanced production technology for the Stinger missile to Germany, Belgium, Greece, Italy, the Netherlands, and Turkey; for the Patriot to Japan and Italy; and for the AIM-9L Sidewinder air-to-air missile to Japan, Germany, Norway, Italy, and Taiwan.

U.S. and European defense firms have not only sold hardware but have also helped to build up the defense industries of newly industrialized nations.[9] This is often accomplished through complex foreign sales agreements in which the buyer purchases, for example, a few copies of an advanced fighter or tank, assembles a second batch under license, and manufactures the rest indigenously (also under license) to the extent that its industrial base can absorb and produce the technologies in question. U.S. firms may compete among themselves or with their

[7]In a direct offset arrangement, the seller agrees to let the buyer manufacture parts and components of a weapons system as a condition of the sale. The seller often provides training and technical assistance and transfers technology sufficient for the buyer to undertake indigenous production of the parts or components in question. According to one definition, offsets include "a range of industrial and commercial compensation practices required as a condition of purchase of military exports." See *Offsets in Military Exports* (Washington, DC: Executive Office of the President, Office of Management and Budget, December 1988), p. 3.

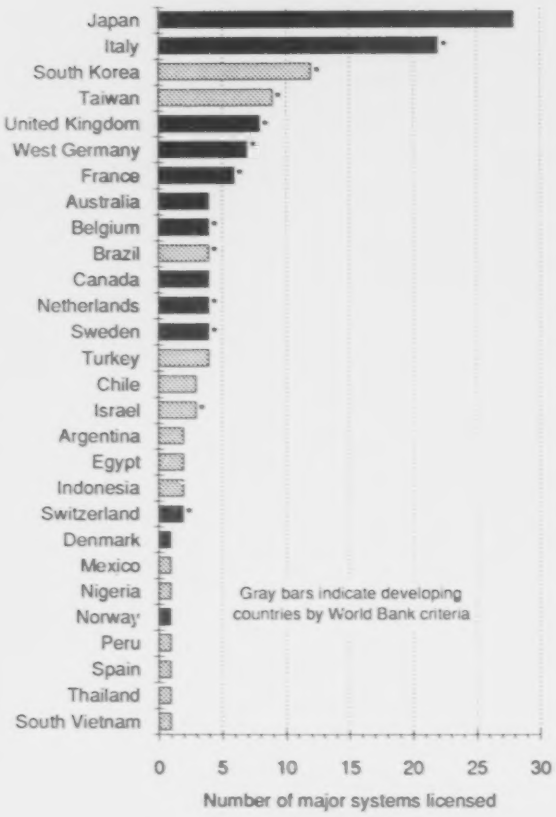
[8]Figure 1-7 shows a leveling off and slight decline in the number of major weapons systems produced under license, both worldwide and for U.S.-origin equipment. This is due in part to the 12-year production cycle (assumed in the figure) and partly because the number of new systems licensed is relatively constant throughout the 1970s and 1980s. However, 1988 (the last year for which data are available) saw the largest number of new systems licensed and the greatest increase in the number of new license agreements for U.S.-origin equipment.

[9]Chs. 5 (Israel) and 7 through 11 (South Korea, Brazil, India, Taiwan, Australia, Singapore, Indonesia) analyze the defense industries of these nations.

European counterparts to make such a sale. A major sale can become a contest between two or more U.S. companies to see which is willing to sell the most defense technology at the lowest price.

The proposed transfer of advanced U.S. fighter technology to South Korea, the Korean Fighter Plane, is a case in point. In 1989, South Korea agreed to buy 120 twin engine F/A-18 fighter aircraft from McDonnell Douglas for $5 billion, with 12 planes to be purchased off-the-shelf, 36 assembled from U.S.-built kits, and 72 produced under license in Korea. But by 1991, the price had risen to $6.2 billion, and the Koreans were demanding sophisticated radar, software, and composite materials technologies that the company was reluctant to release. After nearly 2 years, South Korea broke off negotiations and decided to buy the General Dynamics (GD) F-16 fighter instead. GD's ability to offer the F-16 at a lower price and to add additional technology, an advanced radar, and air-to-air missiles were decisive factors.[10]

Figure 1-8—Licensed Production of U.S. Major Conventional Weapon Systems, by Country Receiving License, 1960-88



* Countries that also issue licenses

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

Photo credit: U.S. Army

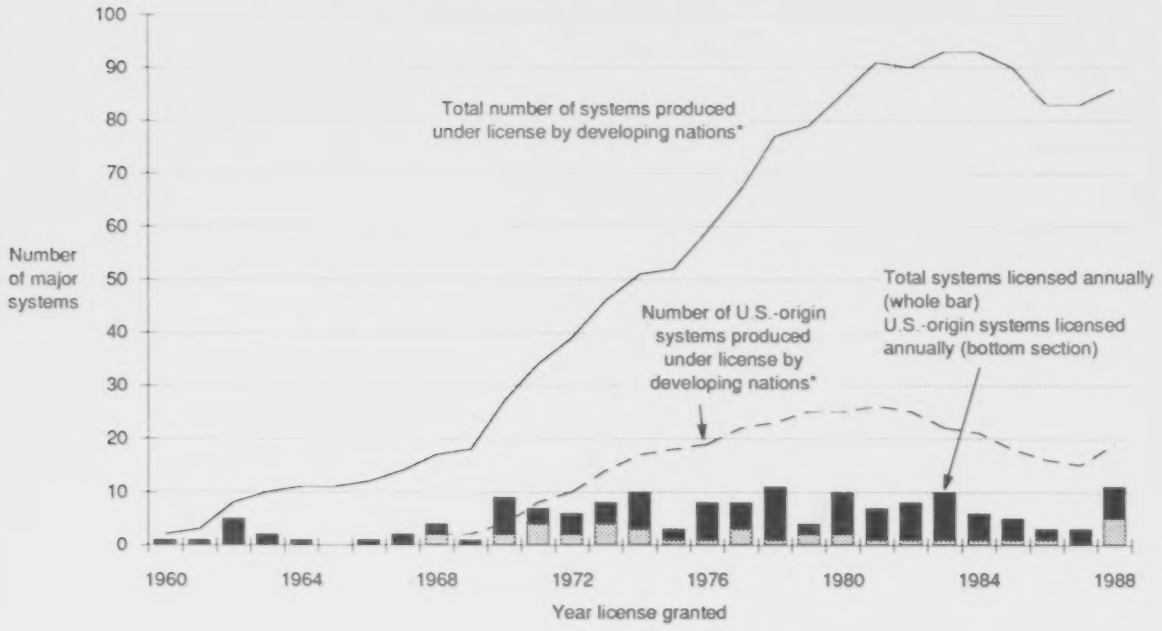
The Stinger missile, which crippled the effectiveness of Soviet air power in the Afghan war, is produced under license by six European nations.

The United States and Europe routinely transfer a great deal of advanced defense technology to less developed nations. In 1988, for example, India, Egypt, Indonesia, South Korea, Taiwan, and Brazil were producing 43 different major weapons under international licensing agreements (see figures 1-9, 1-2, and 1-3).[11] As a consequence, several of these nations have attained significant defense industrial

[10] *The Washington Post*, Mar. 29, 1991, p. F1; *Wall Street Journal*, Mar. 29, 1991, p. A3; *Defense News*, Apr. 1, 1991, p. 4.

[11] Major systems transferred have included the U.S. M1 Abrams tank (to Egypt), the U.S. F-16 fighter and Multiple Launch Rocket System (to Turkey), the German Type 209 submarine (to Brazil and South Korea), the Franco-German Alpha Jet (to Egypt), the Soviet MiG-27 fighter (to India), the Anglo-French Jaguar fighter (to India), the U.K. Swingfire antitank missile (to Egypt), the French Super Puma helicopter (to Indonesia), the Franco-German Milan antitank missile (to India), the German BK 117 helicopter (to Indonesia), among others.

Figure 1-9—Estimated Licensed Production of Major Conventional Weapon Systems by Developing Nations, 1960-88



*Estimates based on the assumption that an average system is produced under license for 12 years.

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

capacity and have entered the arms export business. Between 1978 and 1988, the arms exported by Israel, Brazil, Spain, and South Korea amounted to $16 billion (see figure 1-10). The multiplicity of sources (both advanced and developed countries) has produced a buyers' market in which a range of modern defense equipment is generally available to any nation that can pay for it (see table 1-1).

A final factor influencing policy is that many U.S. defense companies are in financial trouble. Decreased procurement budgets and the rapidly escalating cost of weapons systems have combined to threaten the long-term economic viability of many defense companies as presently constituted. In the past 3 years, a handful of U.S. firms have collectively written off over $3.5 billion in R&D investments.[12] The impact of decreased defense business—large lay-offs and production cut-backs—has and will continue to be felt in congressional districts across the Nation.[13]

Some defense executives would like to expand international sales and collaborative ventures to increase their customer base and revenues in a declining market.[14] But they have been hindered by government ambivalence, by rapidly increasing foreign competition, and by limited demand in many markets. International business has been important to a number of major U.S. defense producers for many years; it will be increasingly critical to some companies as U.S. military procurement budgets continue to fall in the 1990s. Some important weapons plants may have to shut down, and defense

[12]*Defense News*, Feb. 18, 1991, pp. 4, 44.

[13]Economic adjustment in the U.S. defense industries and future defense base requirements are the principal subjects of two ongoing OTA assessments: 1) "Technology Opportunities for Economic Conversion" and 2) "Managing the Nation's Defense Industrial Strength in a Changing Security Environment."

[14]Not all companies have adopted this strategy, and for those that have, it is usually only one element of an overall corporate plan to adjust to changed business conditions.

Table 1-1—Selected Weapons Exported by the United States, Soviet Union, and NATO Europe

Weapons systems	United States	Soviet Union	NATO Europe
Main battle tanks	M1 Abrams M1A1 M60	T-80, T-72 T-64	Leopard 2 (Germany) Challenger (U.K.) Leopard 1 (Germany) Chieftain (U.K.) AMX-30B2 (France) Vickers Mk 3 (U.K.) OTO Melara OF-40 (Italy)
Fighter/attack aircraft	F-16 Falcon F-15 Eagle F/A-18 Hornet	MiG-29 Fulcrum Su-27 Flanker Su-24 Fencer	Mirage F-1 (France) Mirage 2000 (France) Tornado (U.K., Germany, Italy)
Missiles			
Air-to-air	AIM-9M Sidewinder	AA-8 Aphid AA-2 Atoll	R550 Magic (France)
	AIM-7F Sparrow	AA-7 Apex	R530 (France) Aspide (Italy) Sky Flash (U.K.)
Antiship	RGM-84A Harpoon	SS-N-2 Styx	Exocet (France) Sea Eagle (U.K.) Sea Skua (U.K.) Penguin (Norway)
Antitank	BGM-71D TOW-2	AT-4 Spigot AT-5 Spandrel	Milan (France, Germany) Eryx (France) HOT (France, Germany) Cobra (Germany) Swingfire (U.K.)

SOURCE: Office of Technology Assessment, 1991.

executives argue that international sales could keep them open. These factors generate strong pressures for international collaboration in defense technology and for export of top-of-the-line military equipment.

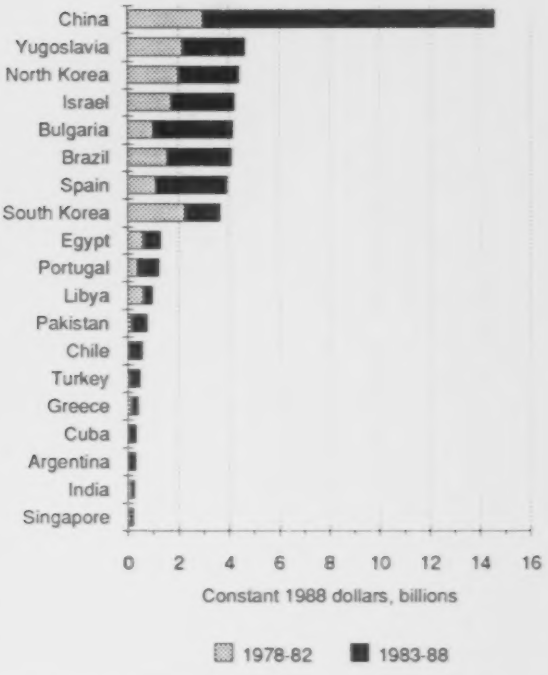
Many U.S. defense executives argue that they do not bargain away their best technology. This allows them to maintain an edge over the competition for the next sale, and assures that the United States will also enjoy a military advantage in the event U.S. troops have to face U.S.-made weapons, or those derived from U.S. designs, in combat. But the problem of proliferation is more complex. Advanced weapons systems—both old and new—emanate from many different sources and tend to fuel regional instabilities. Although they have not been in production for many years, F-4 Phantom aircraft, M-60 tanks, AH-1 Cobra helicopters, SS-1 Scud ballistic missiles, and MiG-23 Flogger fighters (to name a few) are powerful weapons that can generate severe military, political, and psychological pressures when transferred to regions where they have not previously been deployed.

The Persian Gulf War heightened the short-term business prospects for a few U.S. defense compa-

Photo credit: U.S. Army (Frank Trevino)

The Patriot, which became a household name during the Persian Gulf War, is produced under license by Japan and Italy.

Figure 1-10—Arms Exported by Developing Nations, 1978-88



SOURCE: U. S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990).

nies; however, in part because the United States did not lose major equipment, the war will not reverse the downturn in defense business of the late 1980s or even significantly mitigate it. Defense recession comes at a time when the industry is plagued with overcapacity worldwide. The breakup of the Warsaw Pact, coupled with increasingly cordial East-West relations, makes it very likely that this recession may in fact be a fundamental adjustment to lower levels of defense production across the board.[15]

Photo credit: U.S. Army

The M-60 tank is no longer in production in the United States.

The United States has never viewed arms transfers primarily as a sector in international trade. Indeed, a substantial amount of equipment and training is transferred through various grant programs (see figure 1-11). In addition, the Foreign Military Sales (FMS) program is structured to place foreign policy goals above economic considerations. In an FMS sale, the recipient country makes a formal request to the United States for security assistance, the State Department evaluates the request from a policy standpoint (and may or may not authorize it), and the Department of Defense implements it.[16] In most cases, the U.S. Government then buys the equipment from U.S. companies and transfers it at cost (plus a 3-percent administrative fee) to the recipient nation.

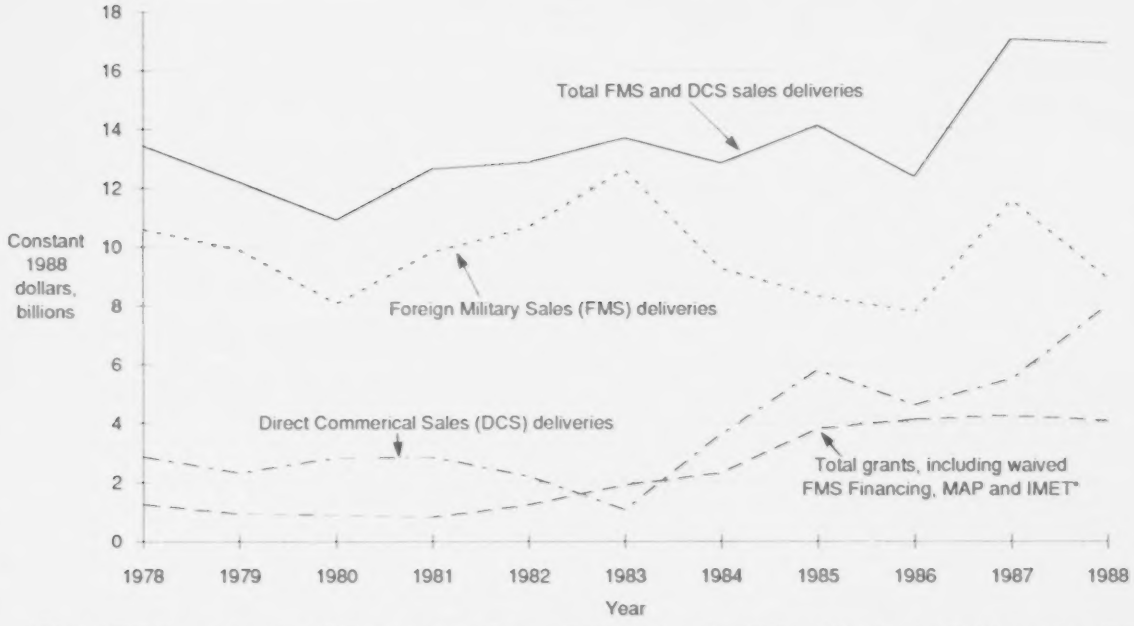
In recent years, however, direct commercial sales (DCS), in which a U.S. company delivers arms directly to a foreign corporation or government, have expanded significantly.[17] In a direct sale, a U.S. company and a foreign government (or firm) reach an agreement and then apply for the requisite permissions and export licenses. Compared to an FMS sale, profits from DCS sales are often higher,

[15]For an overview of issues facing U.S. industrial base planners see, U.S. Congress, Office of Technology Assessment, *Adjusting to a New Security Environment: The Defense Technology and Industrial Base Challenge—Background Paper*, OTA-BP-ISC-79 (Washington, DC: U.S. Government Printing Office, February 1991).

[16]The Defense Security Assistance Agency (DSAA) is the defense agency responsible for implementation of foreign military sales. DSAA may transfer equipment already in stock or it may order additional materiel and defense-related services from U.S. companies to complete the security assistance package. Increasingly, DSAA may also handle licensed production and codevelopment transfers under the FMS program, for example, the FSX fighter program with Japan.

[17]For the purpose of measuring arms transfer activity, the distinction between an arms sale and an arms delivery is important. In the terms foreign military sale (FMS) and direct commercial sale (DCS), the word "sale" means that an agreement to sell has been reached and approved. Some of these "sales" are never consummated, i.e., for one reason or another, they may not result in the transfer of equipment or technology to a foreign country. For this reason, the data in this report refer to equipment or technology that has actually been delivered. Such deliveries often do not occur until 2 or more years after the "sale" is made.

Figure 1-11—U.S. Government and Commercial Sales Deliveries of U.S. Military Equipment, and U.S. Military Grants,* 1978-88



* Waived FMS Financing credits + Military Assistance Program (MAP) + International Military Education and Training program (IMET)

SOURCE: U. S. Department of Defense, Defense Security Assistance Agency, "Fiscal Year Series," Sept. 30, 1989, p. 2.

accountability to the U.S. Government is less, and the overall relevance to U.S. foreign policy goals is usually smaller and less direct. Between 1983 and 1988, delivery of arms under DCS agreements rose by a factor of 6 to reach $6 billion per year (see figure 1-11). These transactions were conducted outside of the U.S. Foreign Military Sales program.

U.S. arms exports have become increasingly contentious in recent years.[18] The FSX fighter codevelopment with Japan, the denied sale of F-15E Strike Eagle fighter-bombers to Saudi Arabia, and the 1990 proposal to sell over $21 billion of assorted equipment to the Saudis are well-known examples. Compared to just a few years ago, the stakes are higher and have expanded to include large amounts of money (and jobs), the future health of U.S. defense companies, the transfer of technology with military and commercial applications, the arming of potential future adversaries, and the proliferation of possibly destabilizing military might.

Principal Findings

Finding 1

As part of their plans for adjusting to a declining U.S. defense budget, many U.S. defense companies are increasing their emphasis on international business. This strategy is being pursued through selling advanced conventional weapons to foreign governments, and increasingly, transferring defense technology to foreign companies through licensed production of U.S. equipment and joint development of new weapons systems. The international operations of U.S. defense companies expanded throughout the 1970s and 1980s, and extensive trade and defense industrial linkages were established around the globe. This process is now being accelerated by a downturn in domestic defense

[18]Concern over sales to the Middle East extends well back into the 1970s. For example, see Andrew Pierre, "Beyond the Plane Package: Arms and Politics in the Middle East," *International Security*, vol. 3, No. 1, 1978.

Photo credit: U.S. Air Force (M. Sgt. Don Sutherland)

Between 1958 and 1979, 5,057 copies of the F-4 Phantom fighter were produced, of which 1,196 were exported to Egypt, West Germany, Greece, Iran, Israel, Japan, South Korea, Spain, Turkey, and the United Kingdom. The F-4 was also produced under license by Japan.

Photo credit: General Dynamics

The M1A1 Abrams main battle tank is the standard against which all others are measured. However, continued domestic production of the M1A1 is in doubt, because DoD plans to field a Block 3 tank beginning in 2002. The M1A1 is slated for licensed production by Egypt after 1992.

spending and by increased competition from Europe and several developing nations for foreign defense sales.

Finding 2

Expanding international business may increase profits for individual U.S. companies, but for U.S. industry overall the benefits are not so clear-cut. International defense industrial collaboration creates competition for U.S. companies both in foreign markets and at home. Highly capable foreign defense firms, moreover, seek strategic business alliances and subcontracting relationships with American companies as a means of penetrating the U.S. market, which is by far the largest and most lucrative in the world (see table 1-2). Some have acquired U.S. defense firms; more often, they demand a share of the production of U.S. weapons systems and transfer of manufacturing technology as conditions of importing U.S. equipment. Increasingly, international collaboration transfers defense technology to other countries and results in more foreign-made defense components being imported to the United States.

Finding 3

A distinctly economic component has entered U.S. international military sales policies in recent years. In a departure from long-standing practice, high-ranking officers of the U.S. Army and Air Force have recently advocated foreign sales of U.S. equipment—including M1 tanks and F-16 fighter aircraft—as a means of increasing production to keep lines open, or to reduce the unit price.[19] In addition, direct commercial sales (deliveries), which do not involve the U.S. Government as an intermediary buyer, have increased dramatically (see figure 1-11).

Finding 4

Cooperating with foreign industry in the development and production of weapons builds up their indigenous defense industrial capabilities, transferring potent, advanced defense technology to foreign nations. In 1988, the United States was engaged in transferring the production technology for approximately 70 major weapons systems to foreign countries, about the same number as our NATO Allies and the Soviet Union combined (fig-

[19]In an official response to a direct OTA query the Army stated the following: "Unless specifically instructed to do so by an appropriate official of the Executive branch, the Department of the Army will not encourage or promote sales of U.S. made military equipment to any foreign country. When it is determined to be in the best interests of the Army, to achieve specific stated objectives and benefits to the Army (e.g., to support the industrial base), it is Army policy to obtain such authorization so as to be able to provide support for representatives of U.S. defense industry in their competition for sales of defense articles and services in the global marketplace."

Table 1-2—U.S.-European Defense Industrial Cooperative Arrangements, 1986-89

U.S. firm	Foreign participant	Product
1986		
DY4 Systems	Ferranti (UK)	Technology transfer
Ford Aerospace	Ferranti (UK)	Targeting pod
GTE	Thomson (Fr)	Mobile subscriber equipment
Hughes	MBB (FRG), Aérospatiale (Fr)	Roland I/II missiles
US West	Siemens (FRG)	Network switching system
Six international teams		SDI theater defense study
1987		
Emerson	Agusta (It)	Antitank system helitow
General Dynamics	Aselan (Tk) Dornier (FRG), ENSAB (Sp), Matra (Fr), OTO Malera (It)	Precision guided munitions
General Electric	Thomson (Fr), VDO (FRG)	LCD unit development
Hercules Aerospace	Intermarine (It)	Minesweeper shipbuilding
Martin Marietta	Dowty (UK)	SR antiarmor weapon
RCA-FMC-General Dynamics-CSC-General Electric	Thomson (Fr), Siemens (FRG), British Aerospace (UK), Signaal (Nd)	NATO AAWS bid
Westinghouse	Plessey (UK)	Missile approach warner
1988		
Allied Signal	Ferranti (UK)	Electric generators for Airbus 340 and EFA
Atlantic Research	British Aerospace (UK)	Missile propulsion system
Bendix	Ferranti (UK)	EFA power system (electronic)
Boeing	Thomson (Fr)	LCD instrumentation
Boeing	Thomson (Fr), Plessey (UK)	NATO LADS bid
Detroit Diesel	Perkins Engine (UK)	Engines (defense use)
General Electric	GEC (UK)	Small-medium horsepower turbines
General Motors-Allison	Aérospatiale (Fr)	Allison T-406
Hercules Aerospace	Aérospatiale (Fr)	MOA high-temperature materials
Hughes	Esprodesia (Sp)	Aries missiles
Hughes	Matra (Fr)	SDI study
Lockheed	Lorenz (FRG)	Air defense system bid for Iceland
Lockheed-Sanders	GEC (UK)	Osprey ASW sonar
LTV	Aérospatiale (Fr)	SA 365 helicopter
Magnavox	Ferranti (UK)	SATNAV system bid
McDonnell Douglas	British Aerospace (UK), GPA (Ir)	MD-11
McDonnell Douglas	GEC (UK)	Mast-mounted sight
McDonnell Douglas	MBB (FRG)	Fee upgrade packages
McDonnell Douglas	Royal Ordnance (UK)	30mm ASP system
Teledyne	Eichweber (FRG)	Tank weapon gun simulation system
Texas Instruments	Thomson (Fr)	MOU radar technology exchange
Tracor Aerospace	MES (It)	Threat adaptation countermeasure
TRW	MEL (UK)	PRC 319 HF/VHF radio
1989		
Boeing	Thomson (Fr)	SDI free electron laser
DARPA	DGA (Fr)	Research on reactive armor
Ensign Bickford	British Aerospace/Royal Ordnance (UK)	Explosive products
General Electric	Ferranti (UK)	High-altitude reconnaissance system
General Electric	GEC Ruston (UK)	T-700 engines (Blackhawk)
Hercules Aerospace	BAT (It)	Composite structures
Hewlett-Packard	Dassault (Fr)	Antenna test equipment
Hughes-E-Systems	MBB (FRG)	Arms verification technology
Hughes-Lockheed	Aermacchi (It)	PATS bid
Hughes-Raytheon	MBB (FRG)	AMRAAM production
IBM	Siemens (FRG)	64 megabit chip
ITT	TRT (Fr)	U.S. Air Force radio altimeter bid
Lockheed	Aérospatiale (Fr)	Euroflag
Lockheed	Aérospatiale (Fr)	Long-term MOU (commercial)
LTV	Phillips HSA (Nd)	FAADS bid
LTV	SEP (Fr), AEG (FRG)	ERINT missile
Martin Marietta	Dowty (UK)	ALFS dipping sonar
McDonnell Douglas	Matra (Fr)	Missile/munitions marketing
McDonnell Douglas	Westland (UK)	Apache AH-64 attack helicopter
McDonnell Douglas	Sogitec (Fr)	Mission planning system

Table 1-2——Continued

U.S. firm	Foreign participant	Product
Motorola	Thomson (Fr)	88000/RISC technology exchange
Nasco	Ficantieri (Sp)	Shipbuilding and design
Pratt & Whitney	Aeritalia (It)	Engines
Pratt & Whitney	Airmotive Ireland (Ir)	Test engine cases
Pratt & Whitney	Nordam (UK)	JT8/Boeing 737
Raytheon	Thomson Sintra (Fr)	SQQ-32 sonar
Raytheon-Martin Marietta	MBB (FRG), ERIA (Sp) Bristol (UK), Fokker (Nd), Plessey (UK)	NAAWS bid
Sundstrand	Labinal (Fr)	Auxiliary power system
Teledyne	Fokker (Nd)	F-50 aircraft
Thiokol	British Aerospace (UK)	Rocket propellant
Texas Instruments	Thomson (Fr)	Obstacle evasion sys (ROMEO)
Unisys	Westland (UK), Agusta (It)	EH101 sales (pending)
Westinghouse	Dassault (Fr)	Microprocessor coproduction
Compiled from the following defense periodicals:		
Defense News	Air & Cosmos	Interavia Aerospace Review
Jane's Defense Weekly	NATO's Sixteen Nations	Flight International

Data search conducted by Federal Research Division of the Library of Congress.

SOURCE: Lt. Col. Willie E. Cole, Lt. Col. Richard C. Hochberg, and Comdr. Alfred E. Therrien, *Europe 1992: Catalyst for Change in Defense Acquisition: Report of the DSMC 1989-90 Military Research Fellows* (Washington, DC: Defense Systems Management College, 1990), p. 45.

ure 1-7). This process has contributed to the emergence of numerous centers of advanced defense industry and technology, first in Europe, next in the Western Pacific, and increasingly among developing nations around the globe.[20] Each new center is capable of transferring technology and selling weapons to additional countries (see figures 1-2 and 1-3). The primary result in the aggregate is expansion and proliferation of defense industrial capacity in both advanced and developing nations. The collateral effect is the gradual and collective loss of control over the destination and disposition of potent weapons emanating from many different parts of the world.

Finding 5

All arms-producing nations, except the United States and Japan,[21] have adopted policies: 1) to collaborate with other nations to share development costs, and 2) to export top-of-the-line weapons systems to reach affordable economies of scale because of the high costs of developing new weapons.[22] This trend has resulted in overcapacity of supply and tough competition for sales to foreign buyers. European arms producers, and those of the developing world, export substantial proportions (as much as 90 percent) of their total weapons production (see figure 1-5). Many have long enjoyed strong diplomatic and political support from their governments. In contrast, the United States produces about 90 percent for domestic consumption, imposes unilateral controls on its defense exports, attempts to control retransfer of U.S.-made weapons to third countries, and conducts defense trade in a highly regulated environment. Nevertheless, on an absolute basis, U.S. exports of both equipment and military technology exceed those of all our allies combined (see figures 1-1 and 1-7).

[20]With respect to the Western Pacific region, the Defense Science Board wrote the following: "The U.S. has supported the growth of a strong Japanese defense industry for many years by a policy of unilateral transfer of technology through licensed coproduction of advanced systems. Similarly, with Korea, we have, in effect, encouraged the build-up of an increasingly self-sufficient defense industry. Our policies have been 'successful' but also have created potential problems. They have resulted in capable industries, overcapacity, and with them, high ambitions and expectations for the future. For Korea, this means explicit pressure for third country sales. For Japan, we reiterate the real potential for export of defense-related equipment as incremental relaxations of current government policy may occur with time." Defense Science Board, *Defense Industrial Cooperation With Pacific Rim Nations*, October 1989, p. viii.

[21]While the United States has entered into codevelopment of major weapons systems with its allies, particularly under the Nunn Amendment, it typically has chosen to absorb development costs in favor of domestic development and production for new weapons systems. Japan has chosen to collaborate almost exclusively with the United States, and has prohibited the export of weapons systems.

[22]French Minister of Defense Pierre Joxe stated, "If you want to be able to afford to make your own weapons, you have to be able to sell them." Quoted in the *The Washington Post*, Apr. 6, 1991, p. A17.

Photo credit: U.S. Air Force

The F-16 fighter is flown by 17 air forces around the world and is assembled under license by three foreign nations; 2,006 of the aircraft have been produced in the United States and 510 in Europe.

Finding 6

Wide diversity of supply among both advanced and developing nations has degraded the use of arms transfers—or their denial—as an instrument of foreign policy. The end of the Cold War has reduced a prime reason for arms transfers—to counter those of the Soviet Union. At the same time, however, unilateral U.S. attempts to restrain the arms trade will likely fail because the buyer nation can find alternative sources with competitive defense equipment (see table 1-1).

Finding 7

International arms business, in which the United States is first among several prominent suppliers, is building up a dangerously armed world. In the Middle East, arms imported to the region have raised the stakes associated with political instability and have figured prominently in the calculations of militant religious regimes and regional strongmen. As the Islamic revolution in Iran has shown, once transferred, modern weapons can outlast the governments they were intended to support. As the war with Iraq has shown, arms may outlast the good will of the leaders to whom they were supplied. Highly armed adversaries make it more difficult for the United States to protect its interests, increasingly so in the future if the United States stays its post-Cold War course of reducing its armed forces and defense expenditures.

Finding 8

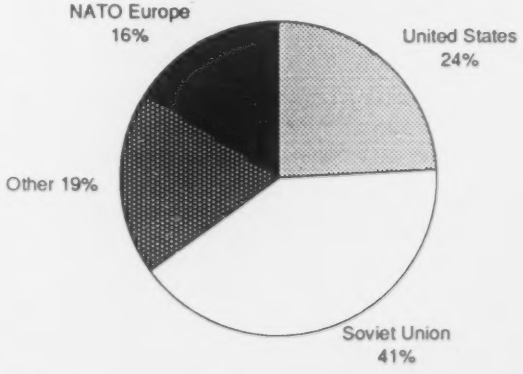
If the goal is to stem proliferation of advanced conventional weapons and defense technology, multilateral restraint by Europe, the Soviet Union, and the United States is a prerequisite. Because these three account for about 80 percent of all arms exports (and a higher percentage of advanced materiel), an agreement to restrain exports could have far-reaching implications (see figure 1-12). In the context of a "new world order," conventional arms control is clearly an alternative to a continuing arms bazaar, especially to the Middle East. Without the stimulus of a polarizing U.S.-Soviet military confrontation, continued proliferation of arms to the Third World has lost much of its military and political justification. Considering its recent role in the Persian Gulf crisis, the United Nations may be the appropriate vehicle to pursue multilateral restraint of defense exports.

Why Congress Should Care

As the defense industries of the world become more capable, the problem of proliferation increases because no single nation (or group of nations to date) can control the ultimate distribution of advanced weapons and the technologies necessary to build them.

The acquisition of weapons and military technology can and does change the balance of power

Figure 1-12—U.S., U.S.S.R., and European Arms Exports as Percentage of All Transfers, 1984-88



SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990), p. 11.

among nations. By exporting large quantities of potent weapons, the advanced industrial states continue to build up the ability of potentially renegade or terrorist nations to threaten the use of force and to invade weaker nations. The Iraqi invasion of Kuwait is the most recent example; if advanced weaponry continues to proliferate at present rates, it is not likely to be the last. Even though the U.S.-led coalition defeated the Iraqi military with unprecedented efficiency and few losses, transferring potent weapons to foreign militaries makes it more difficult for the United States to reduce the size and cost of its military and still protect American interests abroad.

The Persian Gulf War also demonstrated the destructive capability of modern conventional weapons; in less than 2 months, coalition forces devastated the physical infrastructure of Iraq and killed tens of thousands of Iraqi soldiers. This toll in death, destruction, and human suffering may only be the beginning. Even with vastly less military hardware, Iraq's leadership may still devastate the Kurdish and Shiite Moslem populations.

Increasing proliferation of sophisticated weapons and technological know-how has injected new elements of uncertainty and concern into international relations. **The United States and other major exporters are gradually losing control of the weapons transferred as well as the technology and industry necessary to produce and support them.** There can be no assurance that the weapons we and our allies make available to our friends today will not be used against us tomorrow. As the Iraqi situation has presaged, arms trade and collaboration will increasingly influence the environment in which foreign policy decisions are made. If other nations had not armed Iraq, the United States might not have massed so many forces in the Persian Gulf, and the necessity of going to war might have been averted.

Advanced weaponry and defense technology may not always be used for the purposes intended or stay in the hands of the regime to which they were sold. The United States alone sent about $11 billion in military hardware to Iran between 1969 and 1979 and trained over 11,000 Iranian military officers (see figure 1-13).[23] These weapons failed in their purpose, i.e., to enhance the stability of a friendly and moderate regime in the region, and were later used to wage war against Iraq. The Soviets, the French, and several developing nations supplied the Iraqis with a vast arsenal (see figure 1-14 and table 1-3). Those weapons, and U.S. weapons captured from the Kuwaitis,[24] were then available for use against coalition forces in the Arabian Peninsula. Future proposals for defense industrial cooperation between U.S. and European firms will have to be evaluated in light of these circumstances, as well as the comparative permissiveness of European arms export policies.

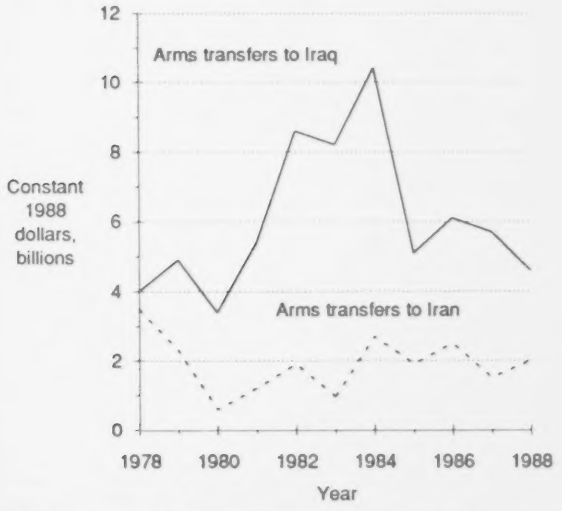
Photo credit: Hughes Aircraft

U.S. TOW antitank missiles were captured by the Iraqis after the August 8, 1990 invasion of Kuwait.

[23]U.S. Department of Defense, Defense Security Assistance Agency, *Foreign Military Sales, Foreign Military Construction Sales and Military Assistance Facts*, Sept. 30, 1989, p. 3; and U.S. Department of Defense, Defense Security Assistance Agency, *Fiscal Year Series*, Sept. 30, 1989, p. 101.

[24]Examples include U.S.-made TOW antitank and Hawk antiaircraft missiles.

Figure 1-13—World Arms Transfers to Iran and Iraq, 1978-88



SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990), p. 93.

As U.S. defense companies adjust to lower levels of domestic production, some important manufacturing facilities may be forced to close. Beyond the immediate economic impact, a great many defense companies that supply parts and components may be adversely affected, with the possibility that the United States could lose crucial defense production capabilities that have taken many years and enormous investments to achieve. Some defense lobbyists see increased international business as a possible partial solution. But there is also the consideration that many buyer nations, especially those with developing defense industries, would likely demand a major share of production, offsetting U.S. gains. Many analysts believe that leaving adjustment of the defense industries to economic forces may produce a defense industry profitable for some companies, but unable to meet the future security needs of the United States. They argue that in the post-Cold War era, the Department of Defense must manage the defense industries efficiently at lower levels of production, and that a policy of selling weapons to other nations just to maintain the U.S. defense industrial base would ultimately fail to address the underlying problems of overcapacity and reduced demand for defense equipment.

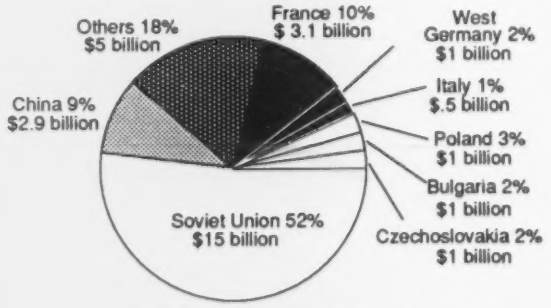
Increasingly, international business arrangements lead to foreign penetration of the U.S. defense market. Typically, a U.S. company (acting as the prime contractor) subcontracts a portion of a defense system to a foreign company. Many foreign defense firms have established a strong marketing presence in the Washington metropolitan area to monitor the U.S. defense market and cement business ties with U.S. defense contractors. In addition, an increasing number of European companies are acquiring U.S. defense firms through foreign direct investment, essentially buying their way into the U.S. market.

Congress has given these activities increasing scrutiny in recent years. Arms transfers constitute a major element in the continuing struggle between Congress and the Executive over how much influence Congress can and should exert over foreign policy. The Executive continues to view and use arms exports as a vital and powerful instrument in the conduct of foreign relations, and Congress continues to assent, sometimes reluctantly, while using its regulatory and oversight powers to influence and circumscribe the foreign policy agenda of the President.

The Policy Dilemma

The state of the international defense business links two issues of current concern to Congress: Controlling the proliferation of modern weapons and defense technology *and* the health of U.S. defense companies. It is likely that a strong consensus could be forged on either issue in isolation; but because of

Figure 1-14—Arms Transfers to Iraq by Country, 1984-88



The United States transferred no arms to Iraq during this period

SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1989* (Washington, DC: U.S. Government Printing Office, 1990), p. 117.

Table 1-3—Developing Nations' Arms Exports to Iraq, 1982-89

Brazil
66 Astros-II SS-30 multiple rocket launchers
20 Astros-II SS-60 multiple rocket launchers
13 Astros Guidance fire control radars
200 EE-9 Cascavel armored cars
300 EE-3 Jacara scout cars
China
4 B-6 bombers (copy of Soviet Tu-16)
72 Hai Ying-2 ship-to-ship missiles (arming B-6 bombers)
700 T-59 main battle tanks
600 T-69 main battle tanks
650 Type 531 armored personnel carriers
720 Type 59/1 130mm towed guns
128 C-601 antiship missiles
Egypt
70 F-7 fighter aircraft (Chinese version of MiG-21)
80 EMB-312 Tucano trainers (built under Brazilian license)
150 BM-21 122mm multiple rocket systems
100 Sakr-30 122mm multiple rocket launchers
90 D-130 122mm towed guns
96 D-30 122mm towed howitzers

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

the linkage, the steps needed to implement a solution to one would tend to undermine resolving the other.

Efforts to control proliferation will almost certainly limit the international sales of U.S. defense companies. Similarly, efforts by U.S. defense companies to expand their international operations will exacerbate the problem of proliferation. The problem cannot be solved by a simple choice between constraining arms exports at the expense of a viable U.S. defense industrial base or accepting an arms bazaar in the developing world in order to support that industrial base.

However, with U.S. leadership, at least acquiescence on the part of the Soviets, and cooperation by the Europeans, it may be possible to avoid the potentially catastrophic consequences of arms proliferation to the developing nations. This effort would require multilateral restraint in arms exports. The effects on U.S. industry might be mitigated by moving to a scaled-down U.S. arms production in which technological progress is sustained, adequate readiness is maintained, and profits are possible.

There is general agreement that uncontrolled proliferation of advanced weapons is not in the overall interest of the United States. No one wants regional instability or potent military threats to U.S. interests abroad. But there is less agreement on how much proliferation is too much, where proliferation is dangerous, and to what extent arms transfers can be used effectively as tools of foreign influence.

If the present level of arms exports is maintained, it will add significantly to the proliferation of weapons—both directly, as well as indirectly through the transfer of technology and production capabilities. One suggested approach to controlling proliferation is to restrict further the access of U.S. defense companies to the international market and letting them adjust as the U.S. market contracts. In this view, addressing the problem of proliferation outweighs the business losses of some U.S. companies and the local economies they support.

Many in Congress (and elsewhere) are concerned about economic dislocation that will result from declining domestic defense procurement. Many believe that U.S. defense companies should diversify their business activities into the civilian economy. Some industry spokesmen have argued that because unilateral restraint is unlikely to stem the proliferation of defense technology and military might, the U.S. Government should adopt a policy to help—or at least not hinder—defense contractors. They believe U.S. companies should be allowed to compete vigorously in the international market to increase their profits and maintain production.

Others contend, however, that increased internationalization means that U.S. defense companies will continue to sell technology to foreign governments, ultimately undermining U.S. leadership in the development and manufacture of defense systems—a process that has already taken its toll in many sectors of international trade. From this perspective, U.S. defense companies are national assets, established to serve the national security, whose operation is authorized and subsidized by government, and whose products are paid for with public funds.

As such, U.S. defense firms are obligated to operate under different rules than civil manufacturers; they are not automatically entitled to participate in unbridled international competition. **The development of a truly multinational defense industrial sector, where corporate giants conduct R&D and manufacturing in many countries of the world, would be cause for grave concern.** It would be extremely difficult for the United States (or any

other country) to control the dissemination of defense products, and corporate planning might not be tied to the security interests of any single country or alliance of nations. Proponents of this view point to the U.S. experiences in Iran and Iraq as prime reasons strict controls must be applied not only by the U.S. Government but also by our allies.

ISSUES AND OPTIONS FOR CONGRESS

Historical Perspective

The topic of conventional arms exports and controls has a long history, and the relevant legislation and associated government programs are extraordinarily complex. Before turning to a discussion of the issues and policy options raised by the findings of this report, a brief sketch of congressional and executive branch interactions over security assistance and conventional arms control is presented. Those already familiar with this area may wish to skip directly to the next section.

Since the passage of the Foreign Military Sales Act of 1968, Congress has exerted strong oversight and has imposed numerous controls on the military assistance activities of the United States. These have included downgrading or eliminating the Military Assistance Advisory Groups at U.S. embassies, earmarking up to 99 percent of foreign military financing funds for particular countries, and restricting third-party transfers of U.S. weapons under the Arms Export Control Act of 1976, the International Security Assistance Act of 1977, and subsequent regulations (see figure 1-15).

In addition to extensive reporting requirements and regulation of arms exports, Congress has at times mandated outright prohibition of security assistance to countries such as Turkey, Pakistan, and Iraq. Congress has also instituted an elaborate notification process that would enable it to block a proposed sale under exceptional circumstances. These and other requirements reflect the determination of Congress to retain its shared responsibilities in foreign policy and, in particular, its power to regulate commerce with foreign nations derived from article I, section 8 of the Constitution.[25]

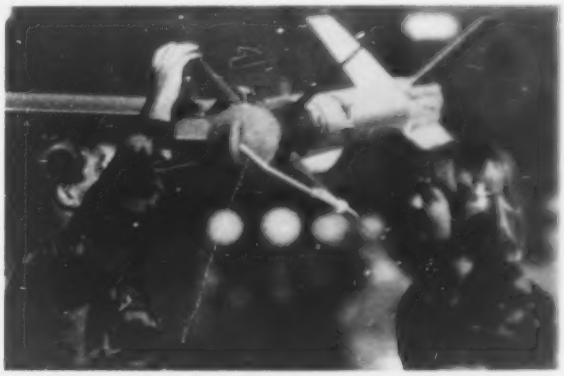


Photo credit: U.S. Department of Defense

The AIM-9 Sidewinder air-to-air missile is produced in numerous versions and is manufactured under license by Germany, Italy, Norway, the U.K., Japan, and Taiwan.

Nevertheless, Congress has rarely intervened aggressively in the U.S. foreign military sales program.[26] As a result, the executive branch has exercised considerable latitude in the definition and conduct of arms sales and the transfer of defense technology. This is evident from the extreme change of policy from the Carter to the Reagan Administrations.[27] President Jimmy Carter saw the transfer of arms "as an exceptional foreign policy implement, to be used only in instances where it can be clearly demonstrated that the transfer contributes to promote our security and the security of our close friends."[28] Four years later, President Reagan took the other extreme approach. Arms transfers would be "an essential element of [U.S.] global defense posture and an indispensable component of its foreign policy."[29]

Although the President has recently proposed that major supplier nations exercise "collective

[25]Thomas E. Mann, *A Question of Balance: The President, the Congress and Foreign Policy* (Washington, DC: The Brookings Institution, 1990), pp. 4-7.

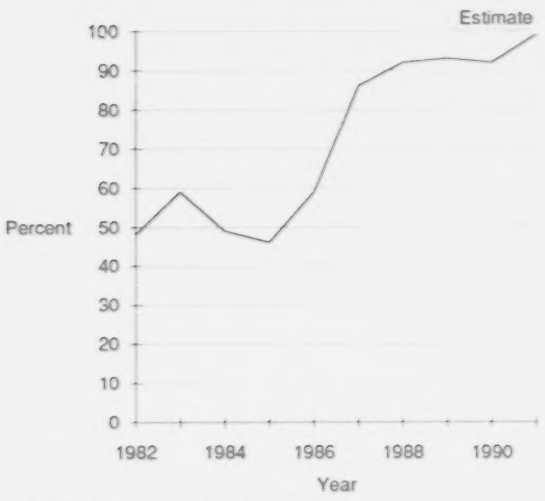
[26]Craig M. Brandt (ed.), *Military Assistance and Foreign Policy* (Wright Patterson AFB, OH: Air Force Institute of Technology, 1989), p. 152.

[27]Andrew J. Pierre, *The Global Politics of Arms Sales* (Princeton, NJ: Princeton University Press, 1982), pp. 52-66; Paul Y. Hammond et al., *The Reluctant Supplier: U.S. Decisionmaking for Arms Sales* (Cambridge, MA: Oelgeschlager, Gunn & Hain, 1983), pp. 266-67; and Christian Catrina, *Arms Transfers and Dependence* (New York, NY: United Nations Commission on Disarmament, 1988), pp. 80-82.

[28]Presidential Directive on Arms Transfer Policy (PD 13), May 13, 1977.

[29]Presidential Directive on Arms Transfer Policy, July 8, 1981.

Figure 1-15—Percent of Foreign Military Grants Earmarked by Congress, 1982-91



SOURCE: Defense Security Assistance Agency

self restraint" in arms sales to the Middle East,[30] the Bush Administration has also taken the following steps to support foreign sales of U.S. defense equipment. It had previously directed U.S. embassy personnel to increase the level of assistance provided to U.S. defense companies,[31] created the Center for Defense Trade within the State Department, and proposed a "defense GATT" that would allow free and open trade in arms and defense technology within the NATO Alliance, and with other U.S. allies.[32] In March 1991, the Administration proposed that the Export-Import Bank guarantee up to $1 billion in commercial loans to members of NATO, Australia, Japan, and Israel to purchase defense equipment from U.S. contractors.[33]

Recent press reports indicate that the U.S. Army and Air Force are for the first time publicly supporting exports of weapons such as the M1A1 Abrams tank and the F-16 Falcon fighter to keep domestic plants running.[34] Prior to May 1991, the Bush Administration had also used weapons transfers liberally in support of its Persian Gulf policies. It proposed the sale of over $26 billion in U.S. weapons to a variety of countries in the Middle East.[35] In his address to a joint session of Congress following the end of the Persian Gulf War, the President pressed Congress for greater latitude in arms transfers.[36]

There is, then, a continuing tension not only between Congress and the Executive concerning arms transfers, but also between the policy of arming our allies and the desire to prohibit the export of advanced weapons and technology to potentially hostile or irresponsible nations. The recent Persian Gulf experience will most likely increase these tensions. The cases presented in this report indicate that despite long-term congressional misgivings and widely divergent approaches by different Presidents, the knowledge and industrial infrastructure necessary to build advanced weaponry is proliferating beyond our control.[37]

In May of 1990, OTA reported that the United States might need to project power into regions and against countries that had been armed by the Europeans.[38] That situation materialized in the Persian Gulf during Operation Desert Storm, when U.S. troops faced weapons produced by some of our European allies. Similar conditions may arise in other parts of the world. It is even possible that, in time, Americans will be sent into battle against troops armed with U.S.-made equipment. In this context, and because the Executive has taken a strong position in support of international arms trade, Congress may wish to address a number of issues affecting policy on arms transfers, interna-

[30]*The Washington Post*, May 30, 1991, p. A1, and *The New York Times*, May 30, 1991, p. A1.

[31]Cable from Acting Secretary Eagleburger for Ambassador/Charge on "Guidance Concerning Embassy Role in Support of U.S. Defense Exporters," n.d.

[32]On the "defense GATT," see "The Future of Defense and Industrial Collaboration in NATO," a speech presented by Amb. William Taft to the German Strategy Forum and the Institute for Foreign Policy Analysis in Bonn, Germany, Mar. 15, 1990.

[33]This would require the repeal of section 32 of the of the Arms Export Control Act of 1968. *The New York Times*, Mar. 18, 1991, pp. A1 and D6.

[34]*Defense News*, Dec. 17, 1990, p. 16.

[35]In addition, the Administration has orchestrated forgiveness for $7 billion in past security assistance debts for Egypt and has agreed in principle to permit Turkey to sell 40 F-16 fighters to Egypt if the two countries can reach agreement on the terms of the sale.

[36]The President said, "It's time to put an end to micro-management of foreign and security assistance programs, micro-management that humiliates our friends and allies and hamstrings our diplomacy." Text of the President's address, published in *The New York Times*, Mar. 7, 1991, p. A8.

[37]See chs. 3 through 11 of this report for case studies of particular countries.

[38]U.S. Congress, op. cit., footnote 7, p. 4.

tional collaboration, defense industrial proliferation, and the future health of the defense industries in the United States.

The Spread of Defense Technology and Defense Industry

The first three issues presented below address the question: **To what extent should U.S. policy restrict or permit the transfer of U.S. defense technology to foreign nations?** Licensed production (and other forms of international collaboration) is generally increasing worldwide, and U.S. companies account for a large share of the defense technology being transferred in the West.[39] The implications for the United States of increasing collaboration, however, vary for different partners and also depend on the defense policies and level of industrial development of the individual partner nations. Accordingly, this policy discussion addresses three separate cases: Japan, the advanced European defense producers, and certain developing nations.

Issue 1: Defense Industrial Collaboration With Japan

Part of the genesis of this assessment was concern in the 101st Congress over the proposed transfer of U.S. fighter technology to Japan—as part of the FSX codevelopment agreement. Numerous committees of Congress held hearings on the advisability of permitting General Dynamics to work closely with Mitsubishi Heavy Industries (MHI) to develop a Japanese indigenous fighter. A principal concern was that the FSX project might ultimately help Japan become more competitive in civil aviation markets. But the debate largely failed to address the more immediate questions of whether or not transferring this capability to Japan would enhance or detract from U.S., Japanese, and international security, and what the impacts on U.S. defense companies might be.

In three respects, Japan is a special case. First, the U.S. transfers more major weapons systems to Japan than it does to any other nation. Over the past decade, Japan has embarked on a rapid defense build-up and has developed an extensive defense industrial sector, drawing heavily on licensed production from the United States. Because Japan is a major export market for U.S. defense technology, the FSX codevelopment project represented a deepening of already firmly established defense industrial ties. It also meant business opportunities for General Dynamics and its U.S. subcontractors.

Second, concerns that Japan might proliferate U.S.-licensed, codeveloped, or derivative defense technologies are somewhat mitigated by Japan's policy against export of defense equipment. Although this policy may change, it is anchored in the larger U.S.-Japan security relationship, and to the extent this alliance remains stable, Japanese restraint in defense exports will probably be preserved. If, however, trade relations between the two countries continue to sour, a new security environment could emerge in which Japan depends less on the U.S. security umbrella. Change could also result from different perceptions by the two countries of their roles and interests in the evolving post-Cold War security structure. Japan might decide to do what many U.S. policymakers have urged for decades: take on more of the burden of its own defense. In that case, the United States (and the world) would find a Japan with a strong base of defense technology and an industrial sector fully capable of ramping up production swiftly in the event it was called on to do so.

Third, the flow in defense technology between the United States and Japan has been a one-way street to Japan, with few exceptions.[40] Supporters of the FSX project argued that Japan would make advanced radar and composite materials technology available to the United States under the terms of the agreement. While it is still early in the development process, such reverse technology transfer has not occurred, and some argue that the Japanese developments in question were overrated in the first place. In general, government and corporate leaders in Japan appear eager to receive U.S. defense technology, and at the same time, reluctant to share theirs with the United States.

U.S. policy on cooperation in defense technologies between the United States and Japan should

[39]See "The U.S. Aerospace Industry and the Trend Toward Internationalization" (Washington, DC: The Aerospace Industries Association, Inc., March 1988), p. 6.

[40]To date, very little Japanese-made defense technology has been transferred to the United States. However, a significant but unknown quantity of Japanese high-technology products (with both civil and military applications) has been incorporated into U.S. defense systems. In general, the degree of DoD dependence on foreign sources of supply is unknown. See U.S. Congress, General Accounting Office, *Industrial Base: Significance of DoD's Foreign Dependence*, GAO/NSIAD-91-93 (Gaithersburg, MD: U.S. General Accounting Office, January 1991), passim.

factor in the unique circumstances enumerated above and should not ignore lessons learned from the FSX experience. Mired in political controversy from the outset, the FSX project has encountered unforeseen technical problems and appears to be far more expensive than its Japanese supporters expected. Some now doubt the project will reach full-scale production. Many Japanese officials remain bitter about what they perceive to have been less than good faith on the part of the U.S. Administration and Congress. They believed they had negotiated a firm agreement with the Reagan Administration, only to have it reopened in an atmosphere of distrust and mutual recrimination. These officials now advocate greater caution, both politically and technologically, making it unlikely Japan will soon propose another codevelopment project on the scale of the FSX. Projects involving licensed production (and possibly codevelopment of components) are likely to proceed as in the past.

If maintained, the present U.S. policy to permit frequent transfers of defense technology to Japan will continue to build up the defense industrial base of that nation. This, of course, raises the question of the rearming of Japan. Japan has increased its defense expenditures in real terms by about 6 percent per year for the past decade, and is by far the largest military power in the Western Pacific. Few believe Japan intends to build its arsenals to levels reached during World War II. Nevertheless, a key component of its defense industrial strategy is to produce a large number of major weapons at very low production rates, developing the technological know-how and industrial infrastructure that would have to precede a decision to rearm. **If transferring major defense capabilities to Japan is the intent of Congress, then the present policy should be maintained. If not, Congress may wish to consider prohibitions on future transfers of defense technology.**

Japan is able to reap the benefits of much U.S. defense R&D by essentially buying it through licensed production, while returning little or nothing to the U.S. defense technology base (see table 1-4). Japanese officials believe that technology is a precious commodity and, unlike many U.S. defense industrialists, they see it as far more valuable than short-term economic gains. Nevertheless, those who advocate collaboration argue that by transferring defense technology to Japan, the United States enhances that nation's ability to assume a greater share of its own defense and that U.S. defense companies receive monetary benefits as well. Policymakers will have to balance these benefits against the possibility that Japan could change its defense export policies, and that if it does, as many U.S. defense contractors believe it will, the United States will have helped to create another major supplier (and a formidable competitor) in the international arms market.

Table 1-4—Recent U.S.-Japan Coproduction Transfers

F-15J Eagle fighter aircraft
FSX fighter aircraft
CH-47 D Chinook helicopter
KV-107/2A helicopter
Model 205 UH-1H Huey helicopter
Model 209 AH-1S Cobra helicopter
UH-60J helicopter
EP-3C Orion electronic intelligence aircraft
M-110A2 203mm self-propelled howitzer
Patriot missile battery
MIM-104 Patriot mobile surface-to-air missile
MIM-23 Hawk mobile surface-to-air missile
AIM-7F Sparrow air-to-air missile
AIM-9L Sidewinder air-to-air missile
BGM-71C I-TOW antitank missile

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

Issue 2: Collaboration With Western Europe

The major arms-producing nations of Europe—France, Germany, the U.K., and Italy—have long collaborated with one another in the development and production of defense equipment. Some have adopted export-led defense industrial policies, with exports accounting for at least one-third of European defense production.[41] European defense companies are eager to exchange technology with U.S. firms, although historically—because U.S. defense technology was far superior—the United States has transferred a great deal more to Europe than it has received. As OTA has shown, that situation has changed; for purposes of export and collaboration, U.S. and European defense technology and production are now roughly comparable. Many transatlantic subcontracting and joint-venture arrangements are now in effect.[42]

[41]See figure 1-5 for 1984 exports.

[42]U.S. Congress, Office of Technology Assessment, op. cit., footnote 7.

Powerful political and economic forces have transformed the security arrangements of Europe and challenged the continued relevance and viability of the NATO Alliance itself. Major changes in Soviet policies, German unification, the Treaty on Conventional Forces in Europe (CFE), break up of the Warsaw Pact, economic integration of the European Community, and the Persian Gulf War have all helped to undermine the basic assumptions that have driven East-West security relations in the post-World War II period. While much is still uncertain, many analysts believe Western Europe will become increasingly self-reliant, eventually approaching security concerns not as individual nations or members of NATO, but from the perspective of an independent, single European approach to defense. **Differences in U.S. and European defense industrial and arms export practices will figure heavily in calculating the benefits and risks associated with a U.S. policy to permit or restrict the transfer of U.S. defense technology to Western Europe.**

In the past, U.S. policies to transfer technology and arms to Europe were motivated largely by security considerations and military preparations associated with the Cold War and the threat of a potential Warsaw Pact invasion of Western Europe. Those policies worked. In the space of a few decades, they helped build sophisticated defense industries across Western Europe. These policies also contributed to extreme peacetime overcapacity in the defense industries of the West and to intense international competition for sales of advanced weaponry.

In reviewing the U.S. policy of transatlantic defense industrial collaboration and technology transfer, several factors will be important. Countries with whom the United States has collaborated extensively in the past may in fact transfer weapons and technology to nations that oppose U.S. security and economic interests. In the past, European governments have been willing to export their most advanced weapons to a wide range of countries. Although they were not used effectively in the Persian Gulf War, some of the most sophisticated weapons in the Iraqi arsenal were made in France (see table 1-5).[42] It is not impossible that U.S. soldiers will again face European weapons on the battlefield, weapons that may even incorporate innovations first developed in the United States. **If the European nations and the United States are unable or unwilling to harmonize their defense export policies, then Congress may wish to consider restricting future defense industrial collaboration with Europe.**

Table 1-5—French Weapons Transferred to Iraq, 1981-88

Weapon	Type of weapon	Number transferred
Mirage F-1C	Fighter/interceptor	143
AMX-30 Roland ...	Antiaircraft vehicle, missile armed	105
AM-39 Exocet	Antiship missiles	734
ARMAT	Antiradar missiles	708
AS-30L	Antiship missiles	1,200
HOT	Antitank missiles	1,600
Milan	Antitank missiles	4,800
Roland-2	Surface-to-air missiles	1,050
R-530	Air-to-air missiles	257
R-550 Magic	Air-to-air missiles	534

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

Continued transatlantic collaboration in military technology will likely increase interdependence, both in terms of shared technology and with respect to production capabilities. Such interdependence would deepen penetration of the U.S. market by foreign components and thereby increase U.S. dependence on foreign defense equipment and technology. Dramatic growth in strategic corporate alliances and subcontracting arrangements between U.S. and European defense companies indicate this process is already under way (see figure 1-16). Recent acquisition of U.S. defense companies by European firms, large defense cooperation staffs at the European embassies in Washington, and marketing offices of European defense firms inside the Capital Beltway also indicate increasing European penetration of the U.S. defense market.

European governments are unlikely to permit U.S. defense companies to establish a greater presence in Europe that does not entail reciprocal access for European firms. Because the U.S. Government buys more defense equipment than all of the major

[42]From 1980 through 1987, the French sold $6.7 billion (current dollars) worth of advanced weapons to Iraq, including 143 Mirage F-1C fighters and 734 AM-39 Exocet missiles. U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1988* (Washington, DC: U.S. Government Printing Office, 1989), p. 22.

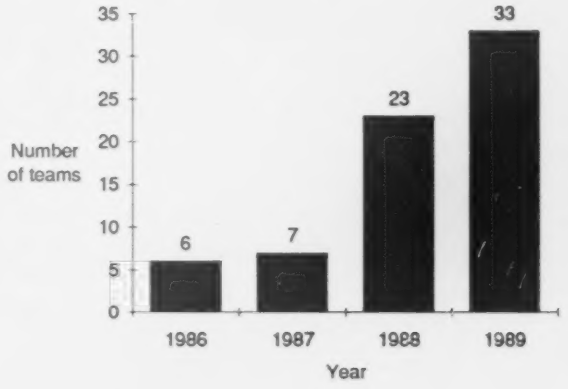
defense-producing states of Europe combined, it is **unlikely that opening up transatlantic defense collaboration and trade would benefit U.S. firms in the aggregate, particularly in a declining global defense market.** Over the past several years the defense industries of Europe have consolidated, creating national champions. These defense conglomerates—such as British Aerospace (BAe) in the U.K. and Deutsche Aerospace (DASA) in Germany—are comparable to the larger U.S. defense contractors in terms of financial resources, technology, production, and sales.

Finally, the transatlantic exchange of defense technology and the industrial linkages on which it depends raise additional proliferation concerns. Ultimately, the United States exerts very little influence over the weapon systems and defense technology of even its closest allies. **Increasing internationalization of the defense industrial base means that national controls over the distribution of defense systems and technologies become weaker.** At some point in the weapons development process, technology itself becomes fungible, that is, innovations of one company working closely with another contribute to the technology base and knowledge of both. It then becomes possible for either party to build on a particular development, modify it for different applications (both military and civil), sell it in products to third parties, or transfer it as technology to others. Proliferation of defense industry and technology to developing nations is discussed in Issue 3 below.

Issue 3: Transferring Defense Technology to Developing Nations

The developing nations depend far more heavily on transferred defense technology than do Japan and the Western European states. Chapters 7 through 11 analyze the defense industries of seven nations: South Korea, Brazil, India, Taiwan, Indonesia, Singapore, and Australia. They indicate that licensed production is a major vehicle for the promotion and building up of indigenous defense industrial capabilities. While licensed production of components is far more common, several of the nations have also undertaken extensive production of major weapons systems in this way.[43]

Figure 1-16—U.S.-European Defense Industrial Cooperative Arrangements



SOURCE: Lt. Col. Willie E. Cole, Lt. Col. Richard C. Hochberg, and Comdr. Alfred E. Therrien, *Europe 1992: Catalyst for Change in Defense Acquisition: Report of the DSMC 1989-90 Military Research Fellows* (Washington, DC: Defense Systems Management College, 1990), p. 45.

Increasingly, U.S. industry transfers defense technology to a wide range of developing nations on an ad hoc basis in the absence of consistent policy direction. **Congress faces a clear policy choice: whether or not (or to what extent) to permit U.S. companies to build up the defense production capabilities of the developing world.** The principal considerations on which policy in this area might be based are discussed below.

Licensed production and other forms of international collaboration in defense technology are critical to building the defense industries of developing countries. Many of these nations have very weak R&D capabilities in defense technology; and the advanced technology and R&D resources they do possess are usually dedicated to commercial efforts. Defense companies in South Korea, for example, typically depend on the government's Agency for Defense Development (ADD) for most of their R&D, and ADD itself has very limited R&D facilities and programs. **The long-term strategy of the Korean Government is to draw U.S. defense companies into cooperative production and R&D**

[43]India has produced 21 major conventional weapon systems under license; South Korea, 16; Taiwan, 13; Brazil and Indonesia, 12 each; Australia, 10; and Singapore, 6.

Photo credit: U.S. Air Force

The F-5 fighter has been exported to 32 foreign nations and has been manufactured in South Korea, Taiwan, and Switzerland.

relationships so that Korean firms can learn from their more advanced partners.[44]

In the absence of significant foreign assistance, the indigenous defense industrial capability of most of the developing nations would cease to expand and might even collapse. While there is some evidence that the developing nations are beginning to transfer defense technology among themselves, they are still largely unable to produce the technology or absorb the costs associated with indigenous *development* of modern weaponry.[45] Because domestic demand is so limited, most must find export markets to reduce the unit costs even for systems produced under license. For this reason, U.S. restrictions on third party sales of U.S. weapons produced under license is a major issue for developing countries. They face the same problems of overcapacity and high development costs that have plagued the advanced producers—only for them, the problems are more acute.

Industrial linkages between U.S. defense companies and weapons producers in the developing world have expanded in recent years. Frequently, such linkages are built into the structure of arms sales. What used to be straightforward sales of major platforms have now become sales combined with eventual licensed production of all or part of the weapon in question. These kinds of arrangements contribute to globalization of the defense industrial base. **Global sourcing may already be making defense production more efficient, but in the long term, it will also tend to displace U.S. defense subcontractors (and U.S. workers) and increase U.S. dependence on foreign-made defense products.**

Nations with developing defense industries have brought about a significant expansion of worldwide defense production capacity, which is not surprising considering their growing technological and industrial presence in international civilian markets. These countries are now entering the international arms trade or have active strategies to do so. Some, like Brazil and Israel, have already made their presence felt, exporting (respectively) 90 and 55 percent of their production (see figure 1-5); others, like South Korea, intend to supply a large portion of their own domestic needs as well as those of their allies. Most will likely adopt a dual-use approach to defense technology, i.e., seeking to leverage civilian technology for defense purposes and producing high quality, but not state-of-the-art, weapon systems.

The United States is now engaged in and negotiating transfer of advanced defense technology to a variety of developing countries (see figure 1-8). These include the M1A1 Abrams tank coproduction with Egypt, the Korean Fighter Plane (a General Dynamics F-16 sale and licensed production arrangement), and the Indigenous Fighter Plane with Taiwan (a twin engine fighter based on F-16, F/A-18, and F-20 technology). While the United States cannot stop these nations from building their own defense industries, U.S. policy on transferring defense technology to them will make a very large difference. Of the 16 major weapons systems produced under license by South Korea, for example, 12 were transferred from the United States; and U.S. companies licensed 9 of 13 major foreign systems being produced in Taiwan. It is unlikely that South Korea or Taiwan would have achieved their present levels of defense production without significant and sustained assistance from U.S. defense companies (see table 1-6).

[44]For example, in the proposed Korean Fighter Plane (KFP) project, an F-16 fighter coproduction agreement, South Korean industry engineers will receive training at research centers in the United States, and General Dynamics engineers will work in Korea to transfer the underlying technologies to Korean companies involved in the project. The Korean strategy is discussed in ch. 8.

[45]These conditions may change in the future for countries as their defense industries mature and they gain experience in introducing civilian innovations into weapons systems, particularly in the field of defense electronics.

Some argue that turning off the U.S. spigot would not solve the problem because the defense industrial base is already global and other nations (particularly in Europe) could provide the requested items. Clearly, U.S. controls on defense industrial collaboration (particularly licensed production and codevelopment) would not eliminate the flow of defense technology unless coordinated with other advanced defense industrial states.

As the largest and most advanced producer of defense systems in the West, a U.S.-led diplomatic initiative to restrict collaboration might slow the pace of defense industrial and technological dispersion. It would also place the United States in a position to exert diplomatic pressure on its NATO Allies and the Soviet Union. Working together, the NATO countries and the Soviet Union could stem the vast majority, perhaps as much as 90 percent, of technology transferred in international defense trade (see figure 1-2 above). A possible approach is discussed below under Issue 4.

Global Trade in Advanced Conventional Weapons

The final two issues address the question: What are the key considerations of a policy to restrict or permit arms trade in major conventional weapons? The Iraqi invasion of Kuwait and subsequent events have focused world attention on international transfer (both sales and grants) of advanced weaponry. On one hand, the Bush Administration has proposed major arms transfers, especially to the Middle East; and the Department of State and Defense Security Assistance Agency (DSAA) have argued to Congress that increased foreign sales are necessary to maintain domestic production of important U.S. weapons systems.[46] On the other hand, the Persian Gulf War also appears to have increased concern among policymakers and the public in the United States, Europe, and the Soviet Union that the proliferation of powerful advanced conventional weapons must be restrained. In France, the fact that French soldiers faced French weapons on the battlefield has catalyzed public opposition to French arms export policies for the first time.[47] These differing perspectives are likely to form the basis of a major policy debate in the 102nd Congress.

Table 1-6—Major U.S. Weapon Systems Produced Under License by South Korea and Taiwan

South Korea
F-16 Fighting Falcon fighter (negotiating)
F-5E Tiger-2 fighter
F-5F Tiger-2 fighter
H-76 Eagle helicopter
Model 500MD helicopter
PL-2 light plane trainer
M-101A1 105mm towed howitzer
M-109-A2 155 self-propelled howitzer
M-114-A1 towed howitzer
CPIC type fast attack craft
LCU-1610 type landing craft
PSMM-5 type fast attack craft
Taiwan
F-5E Tiger-2 fighter
F-5F Tiger-2 fighter
F-5F Tiger-2 trainer
Model 205 UH-1H helicopter
AIM-9J air-to-air missile
AIM-9L air-to-air missile
MIM-23B Hawk land mobile surface-to-air missile
M-60-H main battle tank
FFG-7 class frigate
PL-1B Chienshou light plane
Lung Chiang class fast attack craft

SOURCE: Office of Technology Assessment, from data in Stockholm International Peace Research Institute, SIPRI Yearbooks, 1970 through 1990, *World Armaments and Disarmament.*

Issue 4: The Future of Global Arms Trade

Two principal objections are offered to any U.S. policy to place additional restraints on international defense trade. First, some defense industrialists contend that international sales are important to sustain selected sectors of the U.S. defense industries at present levels of production and capacity. Most industry analysts agree that U.S. Government procurement will continue to fall,[48] and that foreign markets, especially in the Middle East and the Western Pacific, offer opportunities for growth. Proponents urge government to support or, at a minimum, permit expanded foreign sales to cushion the effect of declining domestic procurement.

[46]These include the M1A1 Abrams tank, the Blackhawk helicopter, the MIM-23 HAWK surface-to-air missile, the F-16 Falcon fighter, the AH-64 Apache attack helicopter, and the Boeing 707 aircraft, among others. Several of these were deployed effectively in the Persian Gulf War and are scheduled to go out of production as early as 1993. See U.S. Department of State and U.S. Defense Security Assistance Agency, *Congressional Presentation for Security Assistance Programs*, fiscal year 1992, p. 6.

[47]See *The Washington Post*, Apr. 6, 1991, p. A17.

[48]Salomon Brothers, "Defense Industry Update—The 1992 Department of Defense Budget: Seventh Consecutive Year of Real Decline Is Certain; Backlogs Will Fall," Mar. 18, 1991.

Many analysts argue, however, that contraction in the defense industries is now appropriate, given significant overcapacity both in the United States and abroad. The expansion of the defense industries in the 1980s apparently cannot be economically sustained into the 1990s. As the potential for hostilities between the United States and the Soviet Union has diminished, large defense budgets have become unnecessary and politically unpopular. In this view, a smaller, more efficient defense industrial base can meet the nation's security needs in the post-Cold War era.

The Persian Gulf War has provided support for the view that the United States and its allies must maintain a collective capacity to respond to large-scale military crises in distant lands. But at the same time, the crisis confirmed the growing danger of putting advanced weapons in the hands of governments that may use them for nefarious purposes. Indeed, the proposed $21 billion sale of weapons to the Saudis, and the recent requests by several other Middle East states for substantial arms transfers, take on the character of a self-perpetuating cycle.[49] In this cycle, the United States, the Soviets, and the Europeans must continue to make and export high volumes of weapons to reestablish regional balances of power upset by war or by the last round of weapons sales.

The second argument against placing significant restraints on international defense trade is that unilateral action, while helpful, will be insufficient because the Soviets, Europeans, and other producers of advanced arms would make the sale. Defense lobbyists argue that U.S. industry lost an enormous opportunity when Congress blocked the sale of F-15 fighters to Saudi Arabia in the mid-1980s. As an alternative, the Saudi Government bought between 25 and 30 billion dollars' worth of defense equipment from British companies in the Al Yamamah agreements of 1986 and 1988. In a worst-case scenario, unilateral U.S. action to eliminate foreign military sales might strengthen the competition at the expense of U.S. defense companies, perhaps accelerating a loss of U.S. leadership in a range of defense technologies.

However, U.S., European, and Soviet policymakers are indicating a new willingness to consider restraint in arms sales to the Middle East, because of the role of foreign arms in the Persian Gulf War and the massive military effort that became necessary to defeat them. In defense trade, governments can exert strong regulatory controls because government is often the only buyer, helps to finance R&D and production costs through progress payments, and has the ability to regulate the output and distribution of the product. **If the goal is to reduce the proliferation of potent weapons, it can be approached as a matter of public policy through concerted multilateral action by the United States and other nations with similar interests.**

Photo credit: U.S. Navy

The United States agreed to transfer advanced F/A-18 (above) fighter technology to South Korea. After 2 years of negotiations, the South Korean Government decided to produce the F-16 instead.

Congress could enact stricter unilateral controls through modification of the congressional approval process for foreign military sales and reform of the arms transfer process (Issue 5, below). But this kind of action does not address the fundamental problem—that buyer nations can draw on diverse sources for defense equipment and technology, and that the number of such sources is increasing. The process of creating new centers of defense industry (through increased technology transfer and coproduction arrangements) will deepen this trend if it continues in the future.

With these findings in mind, **Congress may wish to charge the Executive to set up a blue-ribbon commission to develop a U.S. strategy for multilateral agreements on weapons trade and collabo-**

[49]At this writing $9.2 billion in arms transfers has been authorized. As of Feb. 28, 1991, further sales were postponed pending clarification and review of the political and military situation in the Persian Gulf.

ration—considered in light of U.S. foreign policy interests and global political stability in a new multipolar world. Such a commission would report its findings to Congress and to the President for additional consideration. Congress may also wish to consider the option of mandating that such a commission explore the benefits and risks to the Nation of entering into multilateral talks, perhaps initially limited to the major arms-exporting nations of Europe, the United States, and the Soviet Union. These nations account for approximately 81 percent of all arms transfers (see figure 1-12).

The Persian Gulf situation offers some useful lessons. First, the $2.7 billion in advanced weapons purchased by Kuwait were of little use in defending that nation, and some ultimately fell into enemy hands. Second, the United Nations Security Council moved quickly and effectively to censure and enact sanctions against Iraq as a renegade nation unwilling to live by accepted standards of international conduct. And finally, the end of the Persian Gulf War may improve the opportunity for a comprehensive Middle East peace settlement, perhaps including multinational regulation of defense trade and collaboration conducted within the region.

As President Bush has suggested, the end of the Cold War offers the possibility of "a new world order, where diverse nations are drawn together in common cause to achieve the universal aspirations of mankind: peace and security, freedom, and the rule of law."[50] In this spirit, a congressionally mandated commission could explore the implications of establishing international agreements and institutions to limit proliferation of advanced defense equipment and technology.

In the absence of an institutional mechanism to advocate restraint, however, it is extremely difficult and perhaps impossible for the Executive to resist the use of arms transfers to further its foreign policy agenda. The U.S. Government maintains an extensive bureaucracy in the Bureau of Politico-Military Affairs at the State Department, its embassies, the Defense Security Assistance Agency, the Defense Technology Security Agency, and elsewhere, whose purpose is to conduct international trade in arms such that: 1) the foreign policy agenda of the President is promoted and 2) regulation and appropriate security is exercised over the export of defense systems and technology.

Although extensive guidance for arms transfers is provided through the Arms Export Control Act and related legislation, **Congress has not altered the fundamental principle that it is the policy of the United States to sell, grant, and otherwise transfer large quantities of advanced weapons to other nations.** Perhaps more emphasis should be placed on curtailing international arms transfers through multilateral agreements as part of a larger strategy to pursue objectives that contribute to greater world military and political stability.

Issue 5: Reform of the Arms Transfer Process

There are a number of steps that Congress could take to make the arms transfer process more transparent and accountable for oversight and regulatory purposes.

For example, Congress could change the way in which military assistance, including coproduction and codevelopment, is considered in the authorization and appropriations process. At present, security assistance programs are viewed as an aspect of foreign assistance in the international affairs budget. There is, accordingly, a general understanding that assistance will be extended to allies and others in support of U.S. foreign policy goals. However, because security assistance programs cause proliferation of potent weapons and of defense industrial capabilities, they exert effects on international relations that extend far beyond the immediate support of U.S. allies and friends. **Formally separating security assistance from foreign aid programs in the legislative process would help Congress to weigh the costs and benefits of each to the United States.**

Another means of achieving better visibility for congressional oversight would be to require the Bureau of Politico-Military Affairs to report regularly on the proliferation of conventional defense technology and industry, including a regional assessment of the relative capabilities of different national defense industries. **Congress could also require a "proliferation impact statement" to accompany all proposed arms transfers above a specified dollar threshold.** In addition, Congress could require DSAA to include an evaluation and

[50]President George Bush, "State of the Union Message," Jan. 29, 1991. Reprinted in *The New York Times*, Jan. 30, 1991, p. A12.

quantitative analysis of collaborative v. off-the-shelf foreign military sales in the annual Congressional Presentation Document. For major collaborative programs, the Arms Control and Disarmament Agency could also be required to evaluate the extent to which collaboration enhances the defense industrial capabilities of the recipient nation relative to its neighbors or some other standard.

If Congress wishes to assure that the proliferation aspects of large arms transfers are given greater consideration, it could **establish a high-level nonproliferation office, perhaps in the Bureau of Politico-Military Affairs or in connection with the National Security Council.** The purpose of such an office would be to review all pending arms sales to determine—perhaps on a case-by-case basis—the degree to which the sale would contribute to proliferation and whether it would increase the likelihood of political instability or otherwise damage U.S. interests according to legislatively specified criteria. If the office found the sale not to be in the national interest, it could be charged to make that case to the President as a part of the public record.

Congress could make security assistance programs more accountable by reforming the congressional approval process for arms transfers. **By separate legislation, Congress could require that all arms sales above a specified dollar threshold be approved by a vote of both houses, thus reversing the present process where a sale can be disallowed by the same procedure.** A potential problem is that Congress might then have to bring each of 120 to 130 major sales per year to a floor vote, a cumbersome and impractical process. A variation on this procedure would be to batch the different arms sales according to status of the recipient, sophistication of weapons, regional considerations, volume of sales, or some combination of criteria. In this way the legislative burden of the approval process could be reduced.

In recent years, the number of direct commercial sales (DCS) as opposed to foreign military sales (FMS) has increased significantly (see figure 1-11). Congress may wish to take steps to expose DCS transfers to the same level of scrutiny as FMS transfers. Congress may also wish to prohibit DCS transfers on the grounds that such sales promote direct international linkages between U.S. companies and foreign firms and their governments, and are not subject to the full regulatory review process that Congress has mandated for FMS. **If Congress wishes to slow the pace of the internationalization of the defense technology and industrial base, providing disincentives for DCS transactions would be a useful point of departure.**

Congress could also change the information collecting and processing structure that results in a pattern of specific requests by other countries for arms. Currently, approximately 950 DSAA field staff members work closely with host country military and diplomatic personnel to design security assistance packages that are likely to meet both the needs of the host country and the political requirements at the State Department and within DSAA (see table 1-7). In addition, DSAA maintains separate organizations in 56 foreign countries.[51] Because DSAA field staff are promoted according to how effective they are in arranging and managing security assistance programs in specific countries, they have a career interest in promoting sales and transfers of U.S. weapons.

Congress could change this incentive structure by making the determination of security assistance needs a stand-alone function, to be performed by staff who are not involved in the implementation of the program. It might even be desirable to separate out the determination of needs bureaucratically. This could be done by making the Arms Control and Disarmament Agency, or some other State Department office, responsible for evaluating security assistance needs of recipient countries, both in terms of equipment and industrial capability. This evaluating group might have its own field staff to review weapons transfer requests earlier in the process.

Each year approximately 80 percent of DSAA's operating budget is financed through a 3-percent fee that DSAA charges over and above the cost of the weapons that it procures and then transfers to foreign governments. This self-financing fee has amounted to an average of approximately $330 million per year over the past 5 years.[52] **Because the operating budget of the agency is tied to the volume of weap-**

[51]U.S. Department of State and U.S. Defense Security Assistance Agency, *Congressional Presentation for Security Assistance Programs*, fiscal year 1991, p. 49.

[52]This figure is derived from data provided by the Defense Security Assistance Agency.

Table 1-7—DSAA Field Staff, 1989-92

	1989	1990	1991 (estimated)	1992 (proposed)
Africa	69	66	64	60
American Republics	195	190	202	204
East Asia and Pacific	249	245	239	239
Europe and Canada	191	173	157	158
Near East and South Asia	265	261	251	251
Total	969	935	913	912

SOURCE: U.S. Department of State and U.S. Department of Defense, Defense Security Assistance Agency, "Congressional Presentation for Security Assistance Programs, Fiscal Year 1991," pp. 53-54, and U.S. Department of State and U.S. Department of Defense, Defense Security Assistance Agency, "Congressional Presentation for Security Assistance Programs, Fiscal Year 1992," pp. 51-52.

ons transferred, there is a powerful incentive for DSAA personnel to make as many sales as possible, consistent with the law and the policy direction and review it receives from the State Department, White House, and Congress. Congress could reduce or eliminate DSAA's self-financing mechanism, thus removing the incentive to maximize sales. At the same time, it would force the DSAA operating budget to come out of general appropriations, increasing congressional visibility and control over the agency's activities.

* * *

There is an emerging consensus that action by any country alone to stem the proliferation of modern weapons and technology is likely to fail. There are too many sources of supply, and for most weapons systems, alternative sources are available. This situation is partly a consequence of past U.S. policy on collaborating with our allies and friends in the production of weapons systems. It is also due, in part, to the liberal defense export promotion policies of our European allies. As a result, we are seeing today the emergence of an increasingly international and interdependent defense industrial structure in the West.

That structure is anchored in a complex set of strategic corporate linkages between U.S. defense companies and their counterparts in the advanced industrial states of Europe and Asia (see table 1-2 and figure 1-16). It is now being gradually extended to numerous developing nations, including Brazil, Taiwan, South Korea, India, Turkey, Indonesia, Singapore, Australia, and others. The result is loss of control over the dispersion of defense technology through the continuous development of new centers of increasingly capable defense industry around the globe.

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